

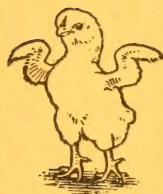
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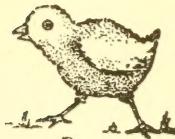
Pleasure and Profit from Poultry



PLEASURE AND PROFIT FROM POULTRY

*Author's
Second*
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PLEASURE AND PROFIT FROM POULTRY

CHAPTER I

STARTING WITH DAY-OLD CHICKS

THE poultryman can be a producer or buyer of day-old chicks. It is common practice for thousands of successful poultrymen to buy chicks to replenish their flocks. For these there is no heavy expense in investment in incubators, incubator cellars, labor and other necessary items that go with the job of incubation. Incubators cost money at the present time, and considering the short time they are in use they make the cost of chicks come somewhat high and initiate an overhead expense of no small means.

Market eggs are bringing a good price and day-old chicks can be bought at a fairly reasonable rate. Besides the expense attached in purchasing incubators, buying oil, labor involved in incubating, which comes at a time when there are a million and one other things to do on the farm, you can conservatively figure that it is going to take two or more eggs out of your production to produce one chick. At this writing eggs are selling in Syracuse, New York, for 50 cents per dozen. Good chicks can be had this year for 12-17 cents apiece. Now figure a little bit before investing too heavily in incubators. Far be it from me to discourage anyone in purchasing incubators, for I feel incubators have a place in every poultryman's equipment. The foregoing statements were made for the benefit of the beginner, and the writer's main hope is in getting that beginner started in the most economical way.

If you feel there is a future opportunity to sell day-old chicks to neighbors and the community in general, it would probably pay you to purchase a small unit of a mammoth machine and add to your units as the business demanded. Starting in such a manner you have not piled up an expense in small lamp-heated incubators which you would have no use for after putting your mammoth into use. Chicks can be produced much more economically in mammoth machines than in a series of small incubators.

I have visited many poultry farms and found nothing but mammoth incubators, not a sign of a small machine around, but invariably these poultrymen have sold off a string of small machines at considerable loss. They had not seen the vision of bigger possibilities in their business when they started.

Now don't be too optimistic over what I have stated; don't be too cock-sure. First know that you can produce birds of the quality that are fit to produce eggs for your incubator, which when hatched will turn out to be big, strong, vigorous chicks that will sell.

If you will follow methods outlined in this book, couple them up with some good common sense and some good hard work, which means constant attendance to business rather than muscular activity, you can soon be a producer of day-old chicks.

Now a good many of my readers will be interested in producing poultry just for the winter eggs and meat they will produce, and will have no general interest in building up a product of standard bred and high egg producing strains of his own. In other words, they will want to be just poultry-farmers

PLEASURE AND PROFIT FROM POULTRY

and not *breeders* or *fanciers*. From that standpoint they can have a world of enjoyment and make good profits, but the breeder, the person who puts his skill into producing standard bred, and by standard bred I mean birds that have the qualities bred in them as laid down by the "American Standard of Perfection," a book published by the American Poultry Association and which is the Bible for all poultry judges, and in addition to these qualities has egg-laying ability bred into them, is going to have more fun and make far larger profits.

I have one friend in the Middle West, a real fancier, who has worked up quite a business in selling day-old chicks for one dollar each. These chicks are well bred, out of show stock, and are sold with the expectation that they will develop into quality breeders and show birds. The price is not high when you consider what a setting of high grade eggs are worth, and give the buyer the same chance of owning a winner as does the breeder. This man would go out of poultry keeping rather than sell his best stock, but is willing to share chances in chicks with those who will pay him his price. Some breeders will not do this, even, but draw the line at the selling of eggs for hatching. A few breeders of note sell neither baby chicks or eggs for hatching, but stop short and "shy" when you try to get them anything except pairs, trios and pens, of full grown stock.

One of our best New England breeders had a visitor, one day several years ago, who proceeded to look over the mated pens. When they had gone through the plant the visitor turned to the breeder and asked: "What can I have a setting of eggs from pen three for? Quickly came back the answer, "Fifteen dollars for fifteen eggs!" That price looked big, and he had less than ten dollars in his pocketbook, so he asked the cost of half a setting. He finally went home with eight eggs and left eight dollars behind him. How many of my readers would have thought they would ever see eight dollars' value out of the product of eight eggs? This man did get his money back, and much more. Out of those eight eggs from the best show mating of the plant, was hatched and reared a cockerel that was especially fine. Its good qualities became known and the fancier who sold the eggs paid this man fifty dollars for that one chick. It was worth even more than he paid, but the other man could not resist parting with a fifty-dollar male out of a dollar egg. What was true of the "dollar an egg" deal has several times come true from the "dollar a chick" offer. There is always a "chance" in the selling and buying of eggs or chicks. It must be considered, not accepted, by both parties. I believe that prices will be higher in the future than in the past, and out of the selling of quality eggs and chicks will come profit to the seller and satisfaction to the buyer.

I know of a farmer living in a modern Massachusetts town who, in addition to carrying on general farming, maintains a plant of 700 layers, and he has never hatched an egg. He buys early hatched chicks, broods them with coal burning hovers in his colony houses which later become his laying houses. I doubt, and he does also, if he could make the wonderful success he has enjoyed in the past if he attempted to hatch his own eggs, which naturally would involve the expense of maintaining breeding pens, incubators, etc., and labor coming at a time when other details of the farm are so much in demand.

CHAPTER II

MAKING MONEY WITH INCUBATORS

SHIPPING chicks over long distances is no longer hazardous. I remember receiving a 1,000-mile shipment of 102 chicks about 12 years ago and finding 101 of those alive and in excellent condition, 98 of which I raised to maturity. Now with more demand for them, with better methods of boxing and more attentiveness on the part of the transportation parties, millions of chicks have been shipped each season until the specialized business of chick hatcheries has become enormous and highly profitable to many. Isn't it fortunate for us that nature has endowed the chicks with sustenance to carry through a period of 72 hours? Nature may sometimes work against us but certainly not in the case of the baby-chick business.

Now with all I have said about the expense attendant to hatching and selling chicks, I believe that many a man on his small one-man poultry plant can well take up the selling of day-old chicks if he has the incubators or the vision of future possibilities with a mammoth machine. If he has no great outlay in small machines the expense of a mammoth unit would not ordinarily burden him. It would mean a home market for many of the eggs laid, the running of the machines through additional months, and the supplying of a demand that really exists. Many a man, or woman, can well add this side of poultry keeping to that already worked out, and gain a better income. The person who is successful in his own hatching is just the one to do it for others. The man who is hatching sturdy chicks is the one to be willing to produce more of them for other folks. There are large incubators, lamp heated, that do splendid hatching; there are the mammoth hatcherers that are heated by a coal stove, to be had to make up a plant of any size. The woman with her one 400-egg incubator can well earn \$50.00 every spring through starting it earlier and running it later than her own needs require. She can sell several hundred day-old chicks every spring. The man who wishes to get deep into the game is not at all hampered by the lack of call for chicks. Such plants are selling today five thousand, fifty thousand, one hundred thousand chicks every season. I have in mind the handling of the smaller number, perhaps ten thousand, each year, and let the business grow as you find you have the ability to carry it through.

More Than One Breed

The small poultry farm that is going into the producing of day-old chicks can well try out the carrying of two breeds. It may be that you will find the Wyandotte and Leghorn to fit in well in this plan of mine. The season of hatching the Wyandotte chicks can begin in January, while that of the Leghorn can run into July. The idea is to hatch chicks that will lay eggs before the coming of severe winter weather. People buy day-old chicks, usually, to get pullets for producing eggs for table use. They are not thinking of the broiler and roaster side of it except as it relates to the getting rid of a product that is in the way. I know the most of the farms that are hatching the chicks for sale are known as the breeders of a single breed and variety, yet on the side they often have other pens of a different breed. They could well supply the sort of chick that would best fit your needs.

Older Chicks

I have been surprised at the growing demand for half or full grown pullets for layers. People who do not care to bother with hatching or breeding are desirous of getting pullets that are well feathered, well beyond the need of artificial heat, well beyond the dangers of young chickenhood. "Pound pullets" are not to be lightly spoken of, fill a demand that is constantly

PLEASURE AND PROFIT FROM POULTRY

increasing, and should be thought of in the planning of the spring's work. Then in the autumn of the year come the village and town folks asking for pullets for layers. In my day I have seen the price of a big pullet increase twice. Today a pullet of the American class, be it Rock, Wyandotte or Red, that is within a month of laying, sells for two dollars to three dollars. It is hard to find a mature pullet of this sort in October for less than \$2.25, and most of them sell for more money. Not far away is a small breeder of Rhode Island Reds who hatches freely through March and April, and he had to shut down on pullet sales at \$3.00 each, because he would have had none left for his own pens. The demand at that price was more than he could fill. A pullet of five pounds should not cost to raise to six months of age over \$1.00 for feed and expense other than care, leaving a good profit for the labor that is needed by the producer. It is one of the questions that must be decided before the middle of March—the question of doing more or less hatching this year. It is a good time to enlarge the poultry side of the farm. Poultry has sold at paying prices for dressed birds, table eggs seem likely to sell at higher average prices through this coming year, and the call for fancy stock is much more than for several years. The poultry shows have been very largely attended, the circulation of the poultry papers is getting more substantial, poultry institutes and lectures are becoming more frequent and better attended, so that I have great expectations of good times for poultry producers, especially those who are fortunate enough to live on the farm.

Make Changes Slowly

Do not make the mistake of growing too rapidly in any new change in your poultry business. If you decide to do a little in the producing of day-old chicks, let the increase be not over double that of last year. Success each year in your moderately enlarged business will point the way to larger and better things another year. You do not want to burden yourself with an outfit that will be a large loss if you find you are not fitted for the work. Do not be afraid to go a little in debt, but do not make it so large as to be a drag for several years. If in doubt what to purchase let it be settled by the success or failures of those in nearby towns. The breed that pays, the hatcher that does good work, the brooder that raises the chicks can be selected by getting close to other folk that are in the line of work that you wish to undertake. While you are learning from the experiences of others, be free in sharing your knowledge with those who come to you for advice. There are no people more open and frank in helping a beginner than poultry owners. If you are in doubt of this, visit some neighboring poultry farm or ask a serious question of some exhibitor at the next show you visit.

Sure Gain Each Year

Somewhere in our poultry work we should improve over that of last year. The moment we stand still we cease to go forward. In fact, the moment we cease to advance we begin to go backward. Let none of us rust, none of us "go to seed," none of us get tired in well doing! Did none of you make mistakes in the year that has passed? Did the cold snap nip the combs of the layers? Would cloth curtains have helped save the combs? Were your houses open or closed? Glass or wire fronts? Really, I do not know as it made much difference in the houses in my section of country. The temperature was twenty below zero, the wind forty to fifty miles an hour. Surely a lot of birds got frozen combs and nipped wattles. They were in open front houses, in glass front houses, in cloth curtained houses. I had less trouble in houses that were tightly closed with thin *cotton curtains*, where there were rather too many birds for the floor space. The more glass in the house the more sure was I to find frosted head parts.

CHAPTER III

METHODS OF BROODING

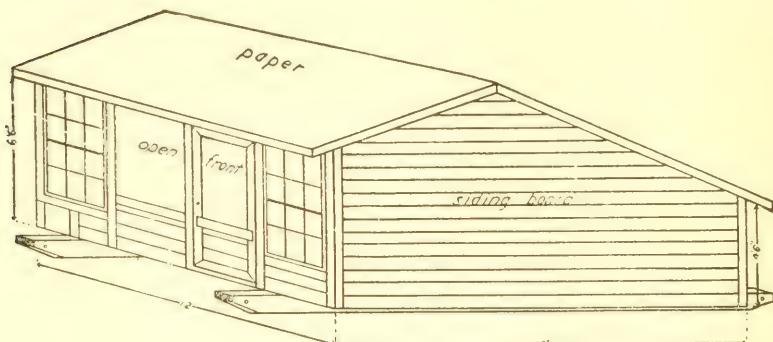
IT is a mistake to put too many chicks into any brooder. The number that was right for day-old chicks may be twice too many at four weeks of age. Only this evening the telephone brought me a message of chicken trouble at the other end of the line. Four weeks' old chicks were off their feed! Were off their legs! Going wrong! They seemed to have been getting too high feeding, been too closely housed at night. In their feed they have been getting fish scrap in the scratch feed, beef scrap in the dry mash, and sour milk in the drinking vessel. Unless the animal food is carefully considered it is easy to overfeed and throw the chicks out of condition. In this case one of three forms of animal food should have been left out! Then a little inquiry brought out the fact that the chicks had done well up to a very few days ago. At the start there had been over 80 chicks put into the circular, portable brooder. Danger from rats had caused the putting of a fine wire fence several inches from the felt of the hover. How had it worked out? The chicks were now four weeks old, were five times as large as when hatched, and the 80 chicks were twice too many for the brooder space. They had increased in size without the notice of the owner, and had reached the age when too little air to breathe was injuring them. Loss of appetite, empty crops, off their legs! That is always a tale of woe when it comes from a poultry keeper. What could I say? Just this: Divide the flock between two brooders, starve the chicks for two or three days, cutting out the beef scrap in the dry mash, and supply abundant green food.

I have no objection to good beef scrap, no objection to a high grade fish scrap, believe in the good results from feeding sour milk, but it is a mistake to feed all three to any one flock of chickens. The quantity of each is so small, when all three are used, that there is a great danger of overfeeding if you pretend to feed them all. If you start the chicks on sour milk make it the chief source of animal food until the chicks are three weeks old, and then gradually change to fish or beef scrap. If at all limited in the amount of milk at your disposal, by all means keep it for the very young chicks. Sour milk starts them right, gets them to growing, and yet does not over-do the feeding business. Do not change from sour to sweet, or sweet to sour milk. Feed either one or the other and stick to it all along. Sour milk is to be preferred to sweet milk in the feeding of chicks or hens because it is not always possible to keep milk sweet and the irregularity of feeding sour and sweet milk is always sure to set up digestive troubles in the intestinal tract. And another thing, the lactic bacteria which cause the souring of milk have been found by extensive experiments to have inestimable value in arresting the development of harmful bacteria in the intestinal tract, one of which is the dreaded white diarrhoea bacteria.

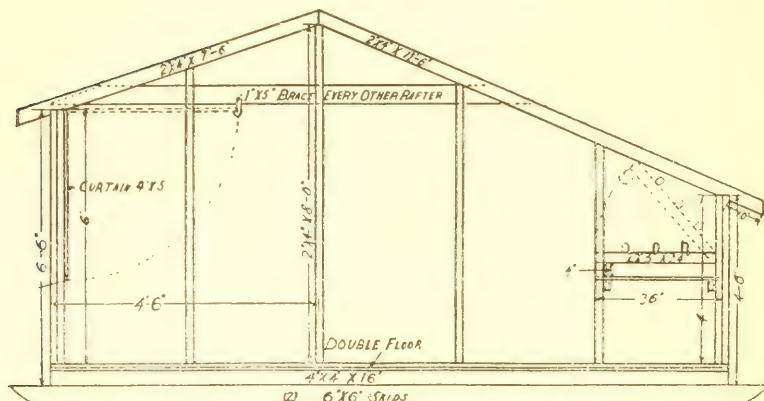
It is not my purpose to tell you whether to use the heatless brooder, the lamp brooder, or the mammoth brooders that are being put out by many makers. The fireless or heatless brooder has had a big run. But this much can be said, the fireless brooder has seen its day, it is dead, and well that it is, for poultry farming cannot succeed where so much risk and labor are demanded. If you are brooding 50 chicks or less, better get some hens for mothers. It will pay you.

The coal burning brooder has come into its own and practically every plant of any size has one or more of them. They are efficient in every way, provided you have a good one. Before purchasing look around and see what your neighbors have, how they like them, etc. And by all means never put

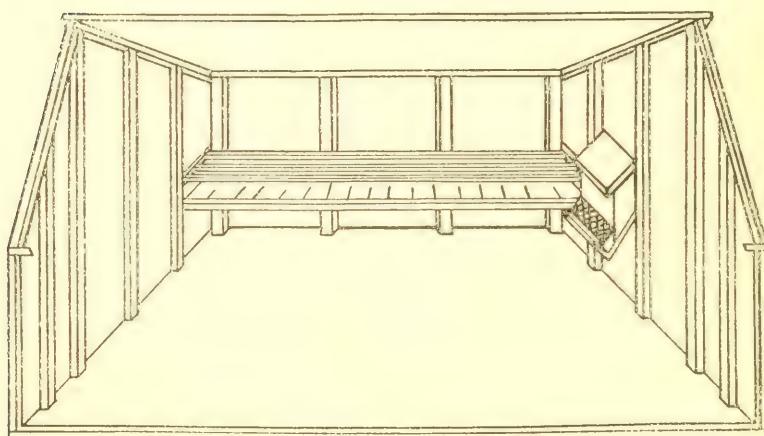
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Front and End View of a Practical Brooder House



Framing of Same Brooder House



Interior View Showing Roosting Poles and Feed Hopper

PLEASURE AND PROFIT FROM POULTRY

more chicks under them than that rated number the manufacturer advises. It is much easier and safer to put a smaller number under them. I buy the 500-chick size brooders and never put more than 350 under them. When the coal burning stove first became popular 1,000 chicks was the usual number to put under them, but poultrymen who did this have seen the folly of their ways and you will seldom see one who puts more than 350 chicks under any single hover.

There may be a thousand and one good ways to feed chicks, but in my estimation there are just two good economical ways to brood chicks, the first, as mentioned before, is with the coal burning stove, and the second is with the portable lamp hover that will care for 50 to 75 chicks. I believe the outdoor lamp brooder has seen its day of usefulness—it has given way to the more modern methods.

An excellent type of colony coal-heated stove brooder house is the one used and recommended by the United States Department of Agriculture on its Beltsville, Maryland, experimental farm. This house is 12 x 14, and has sufficient room to brood 350-400 chicks. At any rate a house 12 x 14 or thereabouts in floor dimensions, with front about 8 feet high in front or 5 in back, with two windows and muslin space in front, will make an excellent place for your stove. Houses of this type can be put on skids and moved around in the orchard or corn field or wherever you want to put them. If your laying house is divided with solid partitions and is not being occupied in the spring months you can put your stove there; however, there is nothing like an orchard for growing stock and by all means use it if you have one. If you haven't one *grow* one this year.

A 6 x 8 ft. house, 6½ feet high in front and 4 feet in the back, with two windows and muslin space in front, will make an excellent house for your portable hovers. Such a house is used by several leading breeders, and is highly recommended by them.

A Practical Poultry House

In order that birds be kept in a healthy condition, and they must be kept in a healthy condition if they are to lay a large number of eggs, they must have good quarters. By good quarters is meant a house where there is sufficient floor space per bird, where ventilation is sufficient to remove the moisture, and to keep the house sweet, a house which can be easily cleaned and a house which is not too expensive.

A most practical colony house for the more northern States has been developed by the New Hampshire College of Agriculture and the Mechanic Arts, with the United States Department of Agriculture co-operating. Illustrations of this house are shown on another page of this book.

This colony house is designed for the use of a coal burning brooder and will house comfortably 400 chicks. Its advantages are: It is easy to clean out and keep clean; it can be moved readily on the average farm with the average farm team; there are no draughts on the floor; it is light, the sun-light extending far back into the house; it can be used in the winter to house fifty laying hens and this is a big advantage because most brooder houses are not adapted for use in winter; it is simply constructed and is as cheap to build as any other type of good brooder house.

Construction

The floor timbers are bolted onto the skids to prevent the skids from pulling together or pulling apart when the building is being moved. The skids are 6 x 6, and this size is used to lift the building over the ordinary obstructions or rough places met in moving. On the farm, a sapling 6 inches or so through can be used, the ends being chamfered off. These skids are run the long way of the building so that they won't interfere with placing

PLEASURE AND PROFIT FROM POULTRY

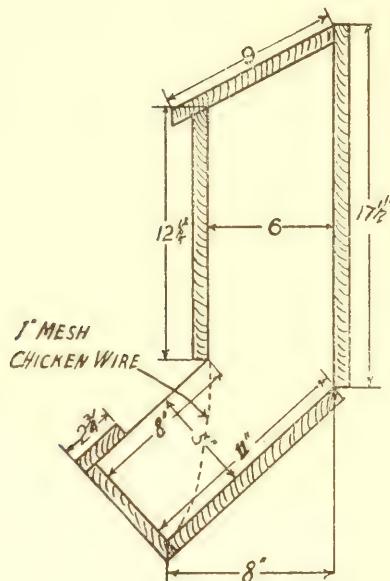


Figure No. 4
A Handy Feed Hopper

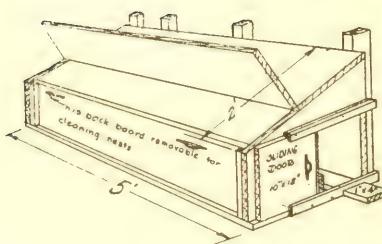


Figure No. 5
A Very Practical Nest

PLEASURE AND PROFIT FROM POULTRY

the houses close to each other in winter if one desires to do so. This is a very good way to use these houses. In the summer use them on the range or in the orchard for the growing chicks, and in the fall haul them up near the laying house and butt them together, and they are nearly as handy as a long permanent laying house.

The floors are double to prevent any draughts blowing up through. It will be well to use building paper between the floors. The studding used was 2 x 4, though 2 x 3 would answer the purpose as well. The walls are of drop siding, but can be made of matched boards, painted, or of ordinary boards, covered with roofing. The drop siding costs a little more but makes a building which is somewhat lighter in weight and a great deal better looking. The objection to building paper on the sides of a portable colony house, is that it is very apt to get torn, and patching roofing paper is rather unsatisfactory work.

The roof is straight-edge boards, covered with ordinary roofing, and this makes a very good roof. The roof projects at the front and at the back ten inches to carry off the water, so that it won't blow or drip back into the house.

The top of the window is placed at the plate so as to get the sunlight as far back into the house as possible.

The door is in front, the upper half being open front, covered with one-inch mesh wire. A water table or a board inclined, to carry off spattering rain, is placed on the lower part of the open front both in the door and in the building itself.

The curtain is hinged at the top and swings back and is held by a fastener suspended from the collar beam. This curtain should be covered with thin cotton cloth. This curtain should be up each day after the chicks are put in, unless it is very cold or windy, and as soon as the nights get at all warm and the chicks are three to four weeks old, leave the curtain up at night. Because chicks need a good deal of fresh air, and just as long as it is warm underneath the hover, the more fresh air they get the better they will be.

The roosting poles are fastened together, and, being hinged at the back, they can easily be lifted up and fastened and be out of the way in cleaning off the dropping boards.

The nests should be placed on either or both walls, according to the kind selected. Of all places to put nests, don't put them under the dropping boards. They are unhandy to get at, they shut off the light from the space underneath the dropping boards, and that much floor space is wasted. Furthermore, they should be as far away from the roosting quarters as possible so that they will be as free as possible from lice and mites. The nests should be easily removable and, if made in two tiers, one above the other, they should not be made together, because they will be too heavy to handle. The bottom of the nest may be made of wire or of a board which is hinged on the back side and which can be let down to easily clean. The nest box should be one long box with no divisions in it at all, because it is not necessary, and there is less liability of crowding and breaking eggs if there are no partitions. An illustration of the above described nest is shown elsewhere in this book.

The feed hopper should be so constructed that there will be no grain wasted, that there is grain always available to the hens, that the grain feeds down readily and yet not too readily, and this hopper, illustrated in this book, seems to fill all these requirements. It is not a perfect hopper by any means but it works well.

When the house is used in winter for hens, a pail set in a wooden frame

PLEASURE AND PROFIT FROM POULTRY

to keep it from tipping over is all right for a drinking fountain. This pail may be set just inside the door on the floor.

Cost

With the present prices of lumber and with labor at \$5.25 a day, this house cost approximately \$100 to build. The cost of labor was about \$33, so if a man was to purchase all his materials and do the carpentry work himself, it would cost him approximately \$67. If a man can get out some of the rough boards or dimension stuff on his own place, he can build one of these houses at a comparatively small outlay of actual cash.

Permanent House

For a permanent house, would recommend that the house be a little higher posted and wider, and as long as necessary to get the desired capacity. For Northern States we would advise that the house be 18 feet wide and 22 feet long, this to accommodate 125 hens. The studs would all be 6 inches longer in order to get the light as far back into the building as possible and also to aid in ventilation.

The windows should be screwed on to the studding about 3 feet from each end of the front side and the space between the windows, from the plate to within 3 feet of the floor, to be entirely open, except for one-inch mesh wire. There should, of course, be curtains which can be let down over this open space. There should be a door in the front side, even though there are several pens of this size, because these doors are convenient in cleaning out the house and in many other ways as well. If there are several compartments, the partitions should be boarded up and doors, which swing both ways, placed in the middle of the house. If as many as six of these pens are built, it will be well to install some sort of a simple litter carrier to help in carrying grain, green stuff, eggs, etc., because it will save much time and labor.

If houses such as are described in this book are built, the birds will be in good condition, will be free from colds and roup, will lay well and, during the breeding period, will be in condition to lay hatchable eggs.

Now as to directions for operating your stoves or portable hovers, if you will follow the directions that come with them you will be carrying out the best advice there is on the subject, for no one knows his machine any better than does the manufacturer. That same advice can be followed with the incubator. Added warning may be given, however, that even, constant temperatures are necessary if we are to grow vigorous and well developed chicks. Just one good chill will cause you serious trouble. I have seen over 300 chicks in one house dwindle to a paltry few just because the attendant one chilly night preferred to sit by his fireside in comfort rather than make the rounds of his brooder houses. His fire went out and in the morning he found his chicks piled up around the base of the stove. A little attention the night before would have saved him a potential \$500. Moral—Before going to bed make the rounds of your brooders; you will rest easier if you do, and so will the chicks.

Weaning the Chicks

Under ordinary conditions chicks should have ten weeks of brooding. When placed under the hovers the temperatures should be about 98° and gradually decreased. Never take the heat away suddenly; doing so will surely cause piling up. Later in the brooding period the hover may have to be raised to decrease the temperature. If at night you find the chicks are spread out around the rim of the hover and quiet, you may feel everything

PLEASURE AND PROFIT FROM POULTRY

is O. K., but if you find them pushing away from the hover into the corners of the building you had better hang around until conditions are right. At night when I fear the chicks might pile in the corners I pile the litter and additional shavings in the corners and in the morning spread them out over the floor again.

If the chicks should pile at a time when you are not there, there will be much less chance of smothering when this is done, for the chicks will push up on the shavings and fall back, whereas they would jam into the corners and smother if no protection were placed there. When the chicks are first placed under the hover place a wire netting ring of a diameter 6 inches around the hover. This will need not be higher than 6 inches. Doing this will teach the chicks where the source of heat lies and prevent them straying away from the heat.

If you want to prevent toe picking, leg weakness and other chick troubles you will get your chicks out on the ground before ten days have past. The sooner, the better. Toe-picking and eye-picking are caused by a chick's curiosity and for lack of something else to do. Once this is started on you have a vicious habit that is difficult to get rid of and the only cure is to take the injured victims away at once and turn the chicks out if at all possible. Spreading them out over the ground will give them something to do and will divert their minds to other things than toe-picking.

CHAPTER IV

FEEDING THE CHICKS

FORTY-EIGHT hours after hatching my chicks receive their first food —a little sharp grit (sharp sand, if possible to get). This places the digestive tract in readiness for food that is to come later. At this time sour milk is placed before them. Sour milk as a drink is kept before them for the entire growing period. When the chicks are about 60 hours old a little commercial chick scratch grain is scattered in the litter four or five times a day; a hopper containing bran is placed before the chicks where they will have access to it at all times for several weeks. During the day the chicks have three feedings of hard boiled infertile eggs mixed with rolled oats or johnny cake if I do not have too many youngsters. The following recipe for johnny cake is recommended by the U. S. Department of Agriculture:

Corn meal, 5 pounds
Infertile eggs, 6 pounds
Baking soda, 2 tablespoonsful

Mixed with milk to a stiff batter and baked until quite hard. A mixture 1 part hard boiled infertile eggs and 3 parts of bread crumbs or rolled oats will do for a substitute. The johnny cake or substitute is fed twice a day, the chicks receiving it at noon and the last feed in the evening. It should be broken up into small pieces and fed on a board or pan. By all means feed sparingly but feed often, see that their little crops are filled at night.

After 10 or 12 days the johnny cake or its substitute is discontinued and the following growing mash is substituted, and kept before the chicks at all times:

1	pound	corn
1	"	standard middlings
½	"	oatmeal
½	"	bran
½	"	sifted beef scraps

After the chicks are 10 or 12 weeks old your laying mash can be substituted for the growing mash. If that is not done I suggest changing the oatmeal to ground oats.

If you find the commercial chick feed a rather expensive part of your rather you might substitute a mixture of 1 part finely cracked corn and 1 part of cracked wheat, and if not too high in price, 1 part hulled oats. When chicks are old enough use whole wheat and whole oats.

During the growing period the grains should be scattered around the house, provided no rain is falling, morning and night. Feed inside, always, when the weather is bad or ground wet. Sweet food soon becomes sour, and sour food is a good beginning for trouble.

You should have outdoor mash hoppers, also the water and milk fonts should be placed on the range. However, provision should be made for feeding indoors when wet days come along and chicks are unable to get out.

Of course chick grit, charcoal and chick oyster shell should be before them at all times. Green food should be fed from the second day on; if your range is covered with plenty of green stuff that problem is solved. However, I like to cut up onions to feed to the chicks. You cannot imagine how such a feeding will stir a group of the little fellows into playful exercise. And, too, I have seen an onion feed arouse to brightness an apparently droopy and sluggish bunch of chicks.

Feeding and care such as outlined will put your poultry into the laying house in an excellent condition.

CHAPTER V

PULETS FOR LAYING

APRIL is the best month of the year to hatch pullets for profits from table eggs. It is to the April hatched pullet that we have learned to look to be our money maker through the late autumn and early winter months. Get out the largest number of chicks this month of any month of the spring, that is, if you are breeding Wyandottes, Rocks or Reds. The good White Leghorn, perhaps, can be better hatched in May, though April hatches may not mature too early. I plan to fill a new house with Leghorn pullets first for producing eggs for eating, getting them into it by the first of September. Fall egg prices have been wonderfully attractive lately and I want my part in the supplying the market after the fifteenth of August. You tell me that these early laying pullets will moult in November. Let them! They will have given me five to six dozen eggs, at 30 to 40 cents a dozen, and will make the best of breeders along in March and April. By the time the Leghorn pullets are letting up in egg yield, the pullets of larger breeds will be beginning, giving a continuous supply of eggs through all the months.

April hatched pullets, farm raised, are in demand for back yard flocks. More and more are folks finding out that free range raised pullets give the best winter egg yield. These buyers are getting keener each year in making sure of their getting these pullets. An egg-bred pullet, hatched in April, reared properly on the farm, is well worth \$2.00 or better for egg production. The cull pullets from such a flock, off in comb, lobes or color, or with stubs, are not worth just as much, and sell for lower prices. Before the middle of March my cull pullets were spoken for, before they were hatched, part of the money paid down, the pullets to be delivered when nearly mature next October. These pullets will cost me about \$1.25 each to raise to six months old, and can be sold for \$2.00.

The poultryman, on the farm, can well afford to put a part of his spring time into the hatching of pullets for sale, as well as for laying table eggs for his own market. There is many an orchard that would be better because of the presence of a few hundred growing chicks through the summer. No man on town or village lot can compete with the farmer in producing vigorous pullets. The farmer can well turn his attention to the poultry side of his opportunities. Plan to fill your own poultry buildings with pullets and sell the surplus for the purpose I have outlined. April hatched cockerels, if grown well and properly finished off, can be sold in July and August at prices that will return a moderate profit. February and March hatched cockerels get the best of the early summer prices, but April hatched ones are worth producing. Yet it is to the pullets that we look for the best of the profits when we consider the returns from an April hatch.

Whatever you have been feeding through the winter to your poultry, needs changing with the coming of spring. The hens are tired, have been pushed for eggs, and some of them are altogether too fat. They have eaten more than they could use for growth and eggs. It has gone to fat. A more bulky ration is better fitted to the natural egg season and the milder weather. Hens and pullets will lay under almost any conditions during the spring, with little or much food, in all sorts of weather. Especially the breeding stock need a ration that has much bulky material in it.

Good Dry Mashes

While a good laying mash is essentially a good breeding mash, yet it may be fed somewhat differently as the requirements demand. If we find the

PLEASURE AND PROFIT FROM POULTRY

birds overfat in the spring months we cut down on the grain which is the fattening food, in order to make them eat more of the protein or egg-making mash, and if the reverse is true and we find the birds somewhat thin and out of condition we close the mash hoppers for part of the day and increase the grain in order to curtail egg production slightly and to put some flesh and fat on the birds. Birds in proper flesh which have not laid their "eyes out" will produce more and better fertilized eggs than those which are overfat or thin in flesh. So at breeding time our thoughts turn to the condition of our birds and we adjust the laying ration to meet our needs. The following rations are well known by the writer and have given excellent results in the poultry house:

Corn meal	250	pounds
Standard middlings.....	100	"
Bran	200	"
Gluten feed.....	100	"
Ground oats.....	100	"
Alfalfa meal.....	50	"
Beef scrap.....	200	"
Salt	6	"

If you are feeding milk as a drink reduce the beef scrap 100 pounds.

The New Jersey Station Mash

Corn meal	100	pounds
Bran	100	"
Middlings	100	"
Ground oats.....	100	"
Beef scrap	100	"

If your birds do not appear to be up to normal condition give a moist sour milk mash once a day to which has been added 3 tablespoonsful to 10 quarts of the mash of the following tonic:

1	pound	of powdered gentian
$\frac{1}{4}$	"	" " ginger
$\frac{1}{4}$	"	" " saltpeter
$\frac{1}{2}$	"	" " iron sulphate

Continue this feeding for 14 days, giving all the mash the birds will clean up in 20 minutes. This is an excellent tonic and has been in use at the Maine and New Jersey Experiment Stations for years.

If at any time I find the inmates of the pens showing sluggishness, then the hoppers are closed at night and opened at noon.

The stock is still getting mangels for green food, a single feed of whole grains in the late afternoon, with oyster shell and grit in hoppers. Under this plan of feeding, with common care, large yards and clean air to breathe, we expect, and, get, fertile eggs that will produce sturdy chicks.

The Farm Garden

It is one of the pleasures of the farm to have a good garden. The farmer who is making poultry his "money crop" well knows the benefit of growing garden and field crops. It is getting late if your seeds have not been purchased. There is as much difference in seeds as in poultry. Quality seeds cost more than the common kind—and are worth much more than you pay. Seeds are like fertilizer—the higher the price the more you get for your money.

PLEASURE AND PROFIT FROM POULTRY

The farm garden will need a big part set apart for mangels. Often you can double your crop by getting seeds that are well bred. I would take my chances on buying tomato seed anywhere, but select my seedsman with care from whom I buy my mangel seed. I avoid the seedsmen who use overdrawn pictures in the catalogues, as well as overdrawn statements in print. I prefer to get my seed of firms who are producers of part of the seeds they sell, or at least those that have made a reputation for honesty of purpose. The seeds need to be bought, and on hand, some time before you expect to need them.

Trees and Bushes

Trees and bushes add to the value of the farm, and to the happiness of the family. Most of us buy each spring something along that line. I have been well repaid for the setting out of a few cherry trees and quince bushes since I came on the farm five years ago. Cherry trees set out in a quarter acre hen yard, five years ago, are now 8 to 12 feet high, and have given small crops for two years. This year should see them loaded with cherries for the birds and the Sanborns. Quinces set out five years ago have given two full crops, and some set out three years ago gave a little fruit last year. Red raspberries have done the best of anything of the bush kind, though some large blackberries have done fairly well. Strawberries had made a half crop each year, owing to the dry weather each June for four years, and not paid expenses.

CHAPTER VI

GREEN FOODS

I DO NOT know from experience that alfalfa is better than clover for hens and chicks, but I hope to have a good home-raised supply for another fall and winter. I started an acre of alfalfa last August, and it has gone through our severe winter nicely. It was green by the middle of April, had put out many new leaves by the 20th of April, and bids fair to be a profitable part of my farm. I tried to do all that is insisted on as essential to alfalfa growing, using lime, good seed, the inoculated soil, and clean culture, and hope to succeed with it. The young plants that I have examined this spring are loaded with the nodules that seem to be needed to make profitable alfalfa growing. I have always made good use of the lawn clippings, feeding to chicks and old stock, but shall be glad to have the alfalfa to fill in when the dry weather turns the lawn brown and the grass tough and indigestible.

Red clover, alsike clover and alfalfa make a good foundation for the mashes that we find so useful in our poultry work on the farm. Surely we can raise one of these on farms in every part of the country, having our market, right at home, where we can get the one hundred cents of the consumer's dollar. Instead of paying high prices for cut clover or alfalfa, or going without either, we can raise our own, run it through the cutter, and have a high grade article to use freely. If it takes more muscle to cut the clover than you can spare, belt on the little gasoline engine that cuts your wood, pumps your water, turns the churn, or runs the milking machines in the barn. The small power engine is to have a big place on the coming profitable poultry farm.

Grow some mangels or cabbages this summer for the coming winter's supply of green food. A split mangel placed on a nail about 12 to 14 inches off the floor makes an excellent winter succulence, and hung in this manner provides a method of exercise. Cabbages hung on a string about 14 inches off the floor are equally as good. There may be nothing quite as good as sprouted oats for winter, but most of us are unable to find the time to care for them, particularly when we have many birds to feed.

Fine cut green alfalfa or clover will make an excellent summer succulent food for birds housed in yards where no green food is available.

Green Feed

Every hen and chick on the place is getting green food six times a week. Even the little chicks in the brooder house get their chance to get the feed or let it alone. A big wheelbarrow full is cut each afternoon, part of it run through the cutter for the poultry and the remainder fed to the cows as they come to the barn from the pasture. That given the baby chicks is run through the cutter a second time to get more of the fine lengths that they can eat. Why do I feed six days when there are seven in the week? To save the Sunday labor. On Saturday afternoon we cut a double supply, feeding it a little later in the day to the poultry, so that there is plenty left over to be found bright and early Sunday morning as the hens come from the roost. That for the cows is left on the barn floor and fed before they go out to pasture in the morning. That whole field will have to be cut, made into hay for "cut alfalfa" for the laying stock next winter. I am expecting to get three good crops of alfalfa, with much less wheat in the second and third. I could get a fourth crop in the autumn, but prefer to leave it to protect the roots from injury from frost another spring. Until this year there have always been times in the summer when I found my supply of green food either

PLEASURE AND PROFIT FROM POULTRY

short or tough. It looks as though I have something extra fine in the combination of winter wheat and alfalfa. I have a later seeding of wheat and winter vetch, that is an experiment, that also bids fair to get me green food and good hay for various uses. When the alfalfa has reached the stage for hay making it is cut and stored away for winter feeding of stock.

A visitor to the farm yesterday told me that he has had several acres of alfalfa for a number of years, that the abundant use of the cut alfalfa in winter gave him eggs when his neighbors had none. There is a lot of satisfaction in having a big mow of alfalfa in the barn that can be used as freely as you wish. You do not stop to consider the cost as you do when you buy it by the bag and pay near \$2.00 a hundred pounds for it. Cut clover makes splendid litter for the brooders and for the floors of the coops where the hen and chicks are housed. There are farmers whom I know who keep cut clover or alfalfa before their laying stock all through the shut-in days of the year, getting more eggs because of the helpful influence of the food. So long as a pound of dry alfalfa has the feeding value of a pound of bran I shall try to raise my supply. I realize that I know little on the subject, but if other folks have raised four tons to the acre I shall try to do the same. Do not understand me as saying that the chicks out on the free range of the grass land will eat much of the cut alfalfa. However, they have the chance to eat it if they desire, and I have been surprised many times to see how much green food that I supply they will eat in the dry days of mid-summer. The chicks in the brooders get their cut grass fed them on the top of the warm hover, where it will cure into good hay if not quickly eaten while fresh. They make way with lots of it in both green and dry state, and what is left makes good litter.

CHAPTER VII

MONEY IN EGGS

ONE-HALF the profit of my farm comes from the poultry plant. Two-thirds of this is from the sale of eggs. Eggs sell for the low price of the year in late March and early April, increase with the opening of May, mounting up till Thanksgiving and Christmas, holding high selling prices well into mid-winter. There is increased profit in summer eggs. Food is cheap, eggs come in full measure, and the demand is unlimited.

May eggs go quickly and at fair profits. Folks who bought eggs in mid-winter by the dozen, buy them in several dozen lots at this time of the year. No need to hunt up new customers! The old ones take all the surplus of late spring and early summer.

There is good profit in putting down eggs in water glass. If at any time you have a surplus quantity of eggs that go slowly they can be held in water glass that can be had at poultry supply house or drug store. Eggs "put down" are never improved by keeping. They are not equal to new laid eggs, but are better than many that come in cases through the hot summer months. Eggs, to keep well and be satisfactory, should be packed down while still new-laid, unfertile, clean, unwashed. So far as they fall short in any of these particulars, just so far are they likely to be off in quality. The best place to use these put-down eggs is in your own home. Use them in the fall and winter so as to be able to sell the fresh eggs that are scarce and high. If you put them down when selling for 20 cents a dozen, and use them when eggs are 40 to 60 cents a dozen, you will realize that the transaction is a good one. If you sell the water glass eggs, sell them for what they are—home-kept eggs. You should find a ready market for them at 10 to 15 cents below the price of nearby eggs, a good product at a moderate price. Be sure to take them from pens that have no male bird, pack as they come from the nest, and keep in a cool and clean place.

Break Up the Broody Hens

It is neither necessary nor best to let hens go through the broody period as they desire. If you have no need of their hatching for you, break up the wish to hug the nest for three or more weeks. Get the idea out of their head, get them back to laying, and increase the amount of egg money for the year. One of our readers, in a personal letter to me, says: "Neighbors are irritated because I break up my broodies instead of loaning to them. I dislike to be selfish, but I do not like to run the risk of disease being brought back into my flock, and the less broodies I have the bigger my egg record!"

I would make an exception and set most of the good yearling hens that I intend to take over into another year to produce eggs for hatching. These yearling hens need to have the surplus fat taken off, as is well done in the three weeks of "watchful waiting." The hens that I have succeeded to keeping into the fifth and sixth years have been those that have had the rest that comes in setting for a hatch and the weeks of raising a bunch of chicks. But the commercial flock, the rank and file of the layers, should be promptly broken up at the first indication of broodiness. It does not do to wait till they have remained on the nest a week. Feed these hens well. Do not attempt to starve them. Reduce the quantity of food that fattens, but feed all the green food they will eat, with a moderate amount of meat or fish scrap.

Do what the Egg Contest management does—break them up at the start of the hatching fever. Taken early you do not need to confine them over four

PLEASURE AND PROFIT FROM POULTRY

days, when they can be returned to the pen of layers. There is no better arrangement to break up the desire of the hen that wants to set, than the hung up, slatted coop. In this coop, with water and dry mash within reach, the hen will retain her weight and not suffer in any way. Let one of the hens cling to her nest for several days and you have a month's job to get her to laying again. Take them at the start and get a better egg yield from your flock. The hen that lays a few eggs, goes broody, lays a few more eggs, again goes broody, had better be marketed as fresh killed poultry. On the contrary, the hen that seldom cares to set is the one that the farmer wants to retain for future breeding purposes. It was one of the recommendations of the winning pen in the California Egg Laying Contest that not a hen in it went broody during the entire year. This is not rare in the Leghorns, yet this winning pen was of an American variety.

Hatching Results

You will be interested, with me, in the results of hatching from a basket of eggs that came to me in April from California. I had 30 eggs sent me, laid by the six hens that as a pen won a first prize against 66 other pens. These eggs must have been held some time to get 30 eggs from six hens in March. Then you will be interested to know that these six hens were mated to their own sire. Thirty eggs, saved as outlined, nine days in the express journey across the continent, held by me two days before setting. Put under three good hens. Tested out on eighth day; 17 clear eggs, 1 dead germ, 12 strong germs, of which 11 hatched and were living at 10 days. Under all those conditions it was a good hatch. I was satisfied. You may ask why so many infertile eggs? I do not know they were infertile. All clear eggs are not infertile. Holding, express travel, age may have killed the germ before it had a chance to start. Heat may have just started the germ to growing and yet it was killed when too small to be seen in testing. I have no fault to find with that hatch!

CHAPTER VIII

SAVING TIME

HOW can the farmer get time to attend to several hundred hens and raise five or six hundred chickens each year? I do not know how you can do it, but I could not get the results I do if I did not use all the horse power at my command. Hand work is cut down to the limits and horse strength put in its place. Let me give a single instance. I used to kill weeds when I had to! Now I kill them before I see them. That is a queer statement to make but let me tell you the facts. I save half the labor of caring for my corn crop over what I used to do 20 years ago. I save a quarter of the work on the potato field over my practice of 15 years ago. To do this I make great use of the smoothing harrow. The ground is plowed and when a few mild days have started the sprouting of the weed seeds I run the slant-tooth harrow over the ground. Look sharp and you will see millions of white weed stems that are broken loose from their earth connections, left to dry and die. In a few days the corn is put in with a planter. Before it is due to appear I run over the field again, killing more weeds, and when the corn is three inches high a third harrowing is done. Will it not kill the corn as well as the weeds? Not at all. The weeds have little root system, while the corn is rooted below the ends of the teeth of the harrow, out of reach. When a harrow tooth strikes a hill of corn it slips between the shoots of corn, pulling out any little weeds that may be there. As the horse walks across the field the harrow will leave clean culture for six feet wide. Almost no hand work is needed through the growing season. Instead of the long, hard, laborious hours of hard work, the horse does it better in a quarter of the time. The treatment of potatoes is much the same, the harrow being used as long as it can get through the growing potato vines. The time saved in cultivating these two crops will provide for the raising of 500 chicks.

We also save time by the use of the hopper plan of feeding both hens and growing chicks. The layers, through the summer, have their hoppers for dry mash; when the birds feel the need of food they can find a hopper full of good food within reach. We fill the dry mash hoppers once a week, but inspect them on our regular tour of duty to see that there is plenty of the food in them and that they are not clogged. One can save time if he will use self-feeding grain hoppers but I doubt if money can be saved if these rather expensive hoppers are used to any great extent. There is the watering in the morning, the giving of green food in the late afternoon, and the picking up of eggs at dark. The chickens must be let out of the coops in the early morning, their water dishes filled, and the doors closed on them at dusk. It does take many steps, but far from the very many that I used to take on my farm of 20 years ago. Modern ways of doing things have cut down the hours of labor, are giving us as good chicks as ever were raised, and the egg yield is far better than when I used to give long hours to the work. If it were not for these newer ways of caring for and feeding our poultry we certainly should not be able to begin haying in June and get it completed by the Fourth of July. As it is, we are getting much the larger profit from our poultry than from fruit, garden truck, or milk. The keeping of more poultry has helped make both ends meet on several farms that I have known about.

CHAPTER IX

CULLING THE FLOCK

THE live poultryman is culling all the time; when collecting eggs for incubator use he culls out the oversized, undersized and irregular eggs. and if he can, gets after the hens laying these. He puts the weakling chicks out of their misery; he culls out the growing birds that seem to be lagging in growth or generally weak; he culls the layers that lack constitutional vigor, brightness and other apparent characteristics that go with egg production and good breeding.

Think what you may about the value of the many egg laying contests, you cannot have failed to notice that many of the poor pen records have been due to some of the hens that either laid few eggs or none at all. If in these carefully selected pens so many drones are included, what about the home flock made up of all the pullets reared? In the average flock there must be many hens that never pay the cost of the grain given them. To keep these hens, worse yet to breed from them, is to continue owning a flock that does not help pay off the mortgage. The drones must go! The early laying pullets should be banded, and those that have done little laying before the beginning of the breeding season, kept out of the breeding pen. The trapnest is to be used more freely in the future than in the past—if for no other purpose than to get rid of the drones. To breed from low producers is to defeat your own purpose in keeping poultry on the farm. Trapnests can be bought at various prices from the makers, or you can follow the directions as given in several of the State Experiment bulletins. The trapnest shuts in the hen till you can reach her, get her egg, release her and make the necessary record on paper. The trapnest will not do it all alone. The man has a part in the getting of all the facts that will go in the building up of a paying farm stock. To the well selected stock, selected with all the facts of the trapnest, must be added good care, housing, good food. Not only these must be kept in mind but from the time of hatching the pullets have to get care that will keep them growing continuously.

For the man who does not trapnest or has not had the time to watch his laying birds closely, August and September are the months for him to make up for lost time. First, it can be said that Wyandottes, Rocks, Reds and other American class birds will hardly produce profitably after their second year, and unless other circumstances enter, should be sold off at this period. The same can be said of Leghorns and other light breeds after their third year.

The Molt

Now the birds that have molted before September should be culled. In other words, other things being equal, those that have not started to molt by the last of August or first of September should be saved. The trapnest has proven the worth of these late molters. As a rule these birds have laid on through the summer without a breakdown which causes so many to go into a summer molt. These late molters are quick molters, while the early molters as a rule take three to four months to put on a new coat of feathers.

Your late molters can always be told by the dirty and ruffled appearance of their plumage. Upon examination one can determine whether or not molting has started, by the absence of feathers from parts of the body, or presence of small new feathers throughout. Usually the neck or hackle feathers molt first, followed by body, tail and wing feathers, respectively.

PLEASURE AND PROFIT FROM POULTRY

Other Factors

During non-laying periods fowls accumulate a surplus of fat beneath the skin. When laying this surplus fat is called upon, with that fed in the feed, to make yolks of the eggs.

With the non-producer you will find a fatty deposit-like ring around the vent and eye. The vent will likewise be contracted and dry, the pelvic bones (the two points that are felt on either side of the vent) will be pinched and usually thick and hard from fat deposits. The abdomen will be contracted to some degree, hard and coarse to the touch. The shanks, or in general the yellow-skinned birds of the Leghorns, Rocks, Wyandottes and Reds, will be thick and clear yellow for the same reason. The comb will be contracted and of a pale color, the wattles will be so, likewise, and the face of the non-producer will usually be well filled out, somewhat coarse and masculine looking.

To put in the inverse order, the vent of the layer will be expanded, moist and of pinkish color. The pelvic bones will be well spread, thin and pliable; the shanks will have faded in color to a pinkish hue and probably grown thinner. The comb and wattles will have expanded and taken on a bright red color. They will feel sort of moxy to the touch. The abdomen will have expanded and become softer and finer to the touch. The activities of the egg organs, the expansion of the center lines caused by the increased work they have to do when a hen is laying and naturally eating more feed, are the causes for the changes in the abdominal region.

For this same reason the distance between the keel, or as it is sometimes called, the breast bone, and the pelvic bones, increases. If you can place three or more fingers laterally between these bones you can be reasonably sure the bird is, or about to come into laying condition. In the procedure the pelvic bones should be spread so that at least two fingers or more can be placed between them.

In the non-producer Leghorn you will hardly be able to get one finger between these, nor more than two between pelvic and keel. For the American breeds this general rule will hold for two and three fingers, respectively.

These general rules do not always lead to accurate culling, by any means; they are, however, helpful. I have seen as many as 20 birds culled out of a flock of 50 without reducing the original egg production more than one egg. At any rate, it is a sane and economical method to proceed with when the trapnest is not used. The trapnest is the Supreme Judge always.

No one single factor should determine you in keeping or culling out a particular individual; it is better to depend upon the agreement of several factors.

Selling the Old Stock

Do not sell hens at last year's prices before looking into present prices at nearby cities. The men who come to the farm to buy will not tell you of the advance in meat prices and you should be well posted as the summer ends and fall days come on. Instead of asking what they are willing to pay for your live hens, why not start the new habit of making your prices. Certainly every other line of business fixes its own selling price. Try it on this month in disposing of the old stock. With a short crop of poultry this year, an increasing call for good poultry, it is a good time to make the new move of letting the buyer pay your own price! Will he buy? Not always, but he will be more likely to accept your offers in the near future.

Eggs put down in water glass, or sold on the common market, will be all the better if infertile. Except in the breeding months of the year the rooster is a nuisance. You cannot do without him through the spring months, but he can be turned into a little cash now.

PLEASURE AND PROFIT FROM POULTRY

The cockerels go to market when they bring the best price. Just when to sell these young males depends on what your market demands. The Leghorn cockerels usually return the most profit when sold as broilers. The Rock or Wyandotte may be held longer and marketed as small roasters. The farmer with an egg route, or milk route, finds that his customers will take many a broiler, or roaster, if he works his market as he should. It is one way to get the whole dollar of value, rather than get much less when the chicks are shipped to a distant city.

Selling Mature Pullets

Farm reared pullets are worth more than those produced in village yards or on town lots. Well fed, well housed, farm pullets are in great demand and will be quickly taken up this year. For egg production there is good value in such a pullet at \$1.50 to \$2.00. White Leghorn pullets should be worth slightly less than Rocks or Wyandottes, because of their less value when you need to turn them into cash for dressed poultry. March hatched Leghorns will be laying this month, and the larger breeds will get into the same line of work by October. As they mature, perhaps a month before the coming of the first egg, it will be good business to either get them into their permanent houses or else sell them to the folks who are wanting them. To continue to keep them in their summer quarters, or to hold them beyond the laying age, is to lose money. Decide what you will do with the pullets—and then do it quickly.

Fancy Stock

Some of the farms that I visit keep some fancy stock. One in a nearby State carried last winter over 2,000 White Leghorn layers for producing table eggs. In a small house, and large yards, was also kept a good bunch of Buff Wyandottes of the "blue ribbon" sort. The owner of the farm told me he kept the Leghorns for profit and the Wyandottes for his own pleasure. But I know that he turned a good lot of money out of the fancy stock that pleased his fancy. No farm should start into the growing of poultry on a large scale with the idea of getting much out of fancy breeding and showing. It should start with the producing of a fine line of table eggs and dressed poultry, and in the course of years might branch out into the fancy lines. It takes much more knowledge and experience to handle the fancy side than the practical side. Poultrykeeping takes all the skill and patience of the average man, without the fret and worry of the showing and selling of high-class stock. I am not discouraging the man who would breed fancy stock, but I do want the farmer to understand what is needed to succeed along either or both lines. For what you have to put into the work, I believe the most returns will come in the running your poultry part of the farm along the common, practical lines. Six months of the year you will have to sell your eggs for eating, half your surplus cockerels must be sold for meat, so you need birds that will fill these requirements. I have always kept this in mind in the running of my own farm, and have had no reason to doubt the fact that I am in the right.

If the farmer has fancy stock to spare he should be reminded that, like business poultry, there is a short crop. Already many birds have changed hands at good prices, and I know one farmer who breeds fancy stock who has booked orders for half the pullets now out on range. There will be a sharp advance in pullet prices before the coming of freezing weather, and it is well to understand this before accepting "bargain prices" during the summer. March and April chicks are few, May and June chicks more numerous, but all together they cannot begin to fill the demand that is right in sight.

PLEASURE AND PROFIT FROM POULTRY

Farmers who have any surplus stock, old or young, will hardly need to dispose of it at the prices that ranged five or less years ago. A short space advertisement, or even a few lines in the classified department of some good poultry journal, should put him in touch with buyers who will take all he can well spare. Poultry farmers in particular, are beginning to get their share of good business. He is getting more independent in many ways, and money comes easier than ever before in the history of this country. He is getting a fair price for his potatoes and good prices for his fresh-laid table eggs. If the farmer cannot make a good living this year it is because of something that he is not responsible for.

Selling at the Door

Can the farmer afford to bother with small sales of eggs and poultry at the door? In these days of autos and vacations, there is much passing of possible customers. The way-back farm is no longer unseen and unknown. Many folks would gladly buy fresh eggs and home dressed poultry if they knew they could be had right at the farm. Case eggs and cold storage poultry are used by many folks because of the doubtful value of the other sort offered at the market. If you can get the retail city prices at your door you will be making more money and pleasing the city people who make good use of their motor cars. A neat blackboard on a tree near the entrance to the farm, a simple statement in chalk of what you have to sell, prices plainly stated, will draw buyers that will thank you for the satisfaction you can offer. Berries, eggs, dressed poultry, sweet corn and many other vegetables can be sold in this manner if you have the wish to enter into this line of business.

CHAPTER X

SUMMER IN THE POULTRY YARD

EVERYTHING gets warmed up before the beginning of August, and poultry have a hard time of it on the farm unless it is kept in mind. I am in the habit of breaking up most of my matings by the middle of July, and doubling the number of birds in the best shaded yards. Yards without trees are emptied of their hen contents and let grow up to weeds. I have some runs that extend into small groves and these are the ones to give summer comfort to the laying stock. Then the windows are left wide open, with doors fastened back, giving as much circulation of air as can be had. The chicks in the small coops will suffer from heat unless let out early in the morning. Most of the chicken coops have ventilation only on the front, and the flocks need to be given a chance of escape before the morning sun is too hot. One New Hampshire farm has partly solved the fresh air problem by having coops that are open on all four sides, with the roosts well up in the double slant roof. The sides are covered with inch wire netting, keeping out all night prowlers, and the birds perch high enough to escape serious injury from high winds and sudden showers. Certainly they raise splendid pullets, with never a sign of roup, which speaks a good word for their idea of a good chicken coop.

The sunshine not only warms up the inside of the coops and houses, but the water and feed fountains get their attention. A water dish will heat up in an hour's time if right out in the open, supplying water that is insipid, if nothing worse. Keep the fountains in the shade, that the water may keep more satisfying and pure.

Introducing Disease

View all offers of pullets by stray peddlers with suspicion. They may look well today and be broken out with chickenpox or roup tomorrow. I have known poultry folks to sell off stock that appeared well—on the breaking out of illness in a few other flocks. These peddlers pick up a lot of good looking stuff that may cause you the loss of many anxious days and money. Even the coming into your barnyard of one of these teams may leave you scattered germ life to infect your plant. While chickenpox may not be a serious illness in August weather, the disease may linger in the farm, to break out in late autumn days with terrible results. While poultry diseases do not bring the disaster that does hog cholera, they are serious enough to be kept in mind by the poultry farmer. It cost one farm in New England, last year, over \$400 because of chickenpox brought in by a Sunday afternoon call by a neighbor. Probably he brought the infection on his shoes, stuck on in his visits to his own infected flocks. He did not realize what he had on hand, he did not know that he was a carrier of the illness, but that did not save the other fellow from a hard experience.

Drinking Water

Water is absolutely needed, in full quantities, always within reach, if you would get good growth in chicks or eggs from mature hens. The egg is composed of about 65% water and mature fowl 55%, growing fowl approximately the same. I have known poultrymen who were careful about supplying plenty of good food, who were careless as to quality of the drinking water. One poultryman who has won more than a half dozen blue ribbons at the Madison Square Garden Show never cleaned out his water pails through the entire summer months. Worse than that, he set these pails out in the hot

PLEASURE AND PROFIT FROM POULTRY

sun, out in the yards, just inside the wire netting, in full exposure to the hot summer's sun. From April to October these pails stood there, water poured in through the wire netting, from day to day as it was drank or it evaporated. Dust, leaves, filth got into the pails, settled to the bottom, only to be stirred up in the adding of new water. Sour, filthy, strong smelling! Do you wonder that such a man was also careless in the shipping out of ill chicks and diseased hens? Water costs little more than expense of taking and caring for it. Because it is cheap we are not as careful in its use as if it was the value of milk.

Perhaps the first thing to do in the early morning is to fill the water dishes in all the houses, as well as those out on the chicken range. Water is the first need of poultry as they come off the roost or out of the small houses. You will not be doing the right thing to have them go to the water dish and find it empty. Filling the water fountains is the first chore on the well conducted poultry farm. Shall the old water be emptied out? How often shall we wash out the pail or fountain? That depends. If the dishes were filled the night before, if the night had been cool and quiet, then it might not be needed to do more than to fill the dishes to the brim. On the other hand, if the water was warm, dust scratched into it, or droppings seen in it, then there is nothing left to do except to empty and scrub clean. The water needs to be as near clean and cool as you can get it. I am not saying that many hens get sick because they drink unclean water, but I do urge that safety is in giving the best that is at our disposal. We have trouble enough as it is with the most careful care, not to court it by giving water that we would not be willing to wash in.

In the laying houses, with the full hoppers of dry mash before the hens, the water dish should be filled up at night, also, that the stock may have the water to mix with the dry food. Long before you appear on the scene the hens will have made many dozen trips between feed box and water pail. The hopper feeding of dry grains means the drinking of more water than if given in wet mashes. You have to supply the water in some way, whether you use dry or wet mashes.

During cold weather you should provide some means to prevent freezing. There are several water heating fountains on the market that will pay their cost to you in a short time. Poultry do not require warm water but water with the chill taken out is ideal. Fowls must have water the minute they get off the roost and as a rule most of us are not there to give it to them unless heated fountains have been filled the night before. With no water before them, fowls will refuse to eat dry mash, and when they do that what happens? Fewer eggs.

Few farms can afford to put in any special system of taking water to the houses. Some of the best farms I know depend on small brooks for the water for the hens and chickens. Few of us have any such good fortune as to have running water across our farms, and we need to take the full pails in our hands to the coops and houses. Where water pressure is at hand, it helps to have a hydrant near some central part of the poultry plant. Through the summer and fall well water or spring water has a low temperature that helps us supply something that fills the needs of the feathered stock. The water dishes need to be so made as to easily be made clean. Any fountain that cannot be taken apart and scrubbed is not fit for the poultry yard. You have to get at every square inch of the surface of the parts once in a while, and if you are not able to do this the water will soon become foul.

The water dishes need first attention in the morning—and replenishing, at least near to roosting time in the afternoon. I do not want my poultry to

PLEASURE AND PROFIT FROM POULTRY

come off the roost in the morning and find an empty water fountain, neither do I care to have them go to the roost at night while still thirsty.

Early Feeding

The molting hen and the maturing pullet need lots of good food. The fall days are none too long for them to range and eat enough to keep them right for best results. They need early feeding!

In the laying houses the wide open food hoppers present the opportunity to take food as they get off the perch as dawn comes on. You do not have to think of this if you have the dry mash ready prepared and put into the boxes or feed hoppers. The chicks that are still on range, in the smaller coops, seldom have feed where they can get it till the doors are opened and they have the range before them. The rule with me is to let out the pullets after the water dishes are filled. They get the full, first drink, then rush to the iron mash hoppers or scatter out on the range after the stray grains left from the feeding of the night before. In the center of this chick field of two acres are hung several automatic grain feeders, arrangements that let down the grain only as they are worked by the chicks. The larger chicks seem to get the first chance at these feeders, the smaller chicks taking to the grass and scattered grain. It is easy to tell where the grain was hand scattered the night before, by the bunches of chicks that gather here and there on the grass. With a hopper of dry mash, one of scratch feed, a well filled water dish and access to growing grass, we expect good growth and early maturity. The well grown pullets can hardly help passing into paying poultry if given half a chance at good food and water. The fall months, especially the opening one of September, will see these big pullets eating, drinking and resting, only to repeat the program all through the day. Pullets handled in this way are not always looking for the coming of the feed pail, watching for your steps, following you as you go about your work. You have heard it said many times, that the chicks should be kept a little hungry if you wanted the best results. That has some foundation in theory and fact, but should not be taken too earnestly. There is a great difference between a stuffed chick and a well fed one! There is such a thing as overfeeding of poultry, but I find few good hen men who are too liberal with the food. The careful observer will notice when the birds are overfed and take pains to withhold food till the appetite returns. The only time in the day when I make sure they are well filled is at night as they get ready for the roost.

Room for the Growing Chicks

Fall finds the farmer busy harvesting his corn, digging potatoes, drying his second crop hay, seeding down new grass fields. He is more than busy! In his hurried work with the poultry he is often led to overlook the fact that his chicks are getting too large for their quarters. The July hatched chicks may still be in the brooders, the June cockerels and pullets still together in the roosting coops, the early hatched chicks subject to the dangers from crowded roosts. Crowded chicks get too little pure air to breathe; get injured by the contaminated air of accumulated droppings. It is now time to plan to give these chicks of ours better accommodations for the autumn months. Getting many of them into the winter houses will release some of the roosting coops for the brooder flocks. Taking away all cockerels will give the space to the pullets—your profit-makers of the coming twelve months. Push on the males to the market, that the hens and pullets may have their room!

Home-Grown Grain

I am getting many inquiries as to the prospects of my wheat and corn. The wheat has been harvested, late in July, and gave a good crop of grain.

PLEASURE AND PROFIT FROM POULTRY

The straw is not so good as in the past four dry years, being of less yellow color and more brittle. However, it is worth much more than it cost and will be helpful to egg production when used as winter scratch material. Most of my wheat was cut while still green, and made into good hay. I found it was going to head out while still short, and I decided that good hay was to be preferred to poor straw and grain.

The corn crop is the best for years. It is all grown near the chicken range, on ground that was in grass for five years, and has come through the season with no set-backs of any sort. I raise the white flint, Rhode Island corn, the sort that we eastern people think is sweeter and better for home use. Here it is called "Rhode Island johnny cake corn," and more than one good poultryman that I know is selling this corn for twice what he pays for common western corn. So far as the corn crop is concerned, I only wish I had planted three times as much last spring. I am paying \$1.90 per 100 pounds for corn from my grain man, thanks to the war and speculators, and a larger corn field would have saved me a bunch of money. What I have—and its quality and quantity—will be carefully harvested and fed out. The early maturing ears are saved for seed as well as for cracking for baby chick feed another spring. No chicks of mine get store corn before they are six weeks of age. This hard, well dried, early corn as chick feed lets me raise more chicks than under the former plan of feeding.

My two small lots of buckwheat look well, and, barring frost, will give me some good grain and a lot of poor bedding. I like the quick-growing buckwheat. It fits into many a crop rotation.

CHAPTER XI

SUCCESSFUL POULTRY FARMS

IN a neighboring State, not far away, is a farm that I have watched with much interest. It is making good money from table eggs and the broilers that come in the producing of good pullets. How large is this farm? Let me tell you in egg yield. Last year this farm failed only once in shipping on the 8:00 a. m. train on Wednesday four cases of eggs to one buyer. There was a week in October when the hens were molting and the pullets not hard at work when there were too few eggs to make up the fourth case. This year the contract calls for six cases every Wednesday morning and I am told that it will be kept. This is practically a case of eggs a day in the non-productive month of October. Of course there are other buyers, of course the egg production goes way up beyond this six cases in the late winter and early spring. In fact except in the dull days of autumn the eggs laid will be double this number of cases mentioned.

I have been interested in the methods followed at this farm, as well as the rations fed, and the plan of growing the pullets. The owner of the farm has the sensible idea that every factor is important in the getting of large numbers of table eggs. From the setting of the egg to the killing of the two or three-year-old hen he believes that everything should be well cared for.

To get prolific laying pullets he gets up before the sun every day in the year. Through the spring and summer he lets his chicks out of the summer coops with the appearing of the sun. He tells me he never wants the pullets to flutter against the wire front of his roosting coops. They get all the daylight hours to eat, drink and wander as they please through grass-covered range, or gather in the shelter of the fruit trees or brush along the walls.

These chicks find full feed hoppers waiting for them as they come out of the coops. The pullets have free access to these hoppers up to the last minute before getting into the coops for the short night. In other words—he gives his pullets all the benefits of country living, with as little of the disadvantages as possible of the closed coops and shut-in life of the night. He fights lice and mites before they are expected. He does not wait till they appear, but gets after them when they are not yet due. Houses and coops get the annual spraying with creosote before the coming of the hot days of late springtime.

Autumn Eggs

You want me to tell you how he gets autumn eggs? One way that helps is to keep the yearling and two-year-old hens through the molt. He is not tempted to sell his hens in June for 18 cents a pound when he knows he will get less in October and November. What he loses on the sale of dressed poultry he makes up—several times over—in the splendid egg laying of summer and autumn. His hens are well fed through the hot months. No forced molt is practiced. His scratch feed is given in small quantities in the early morning, and in full feeds at evening. This summer and fall he is mixing his scratch feed as follows: By measure, two parts heavy oats, two parts wheat, two parts barley, one part cracked corn.

He feeds his dry mash in a long, well protected hopper, after his dinner time each day. Enough is given to take them over a period of 24 hours. This mash is different from some that I have known or used, but it is giving him fine results with his business White Leghorns. By measure, he mixes: Six parts bran, two parts middlings, four parts alfalfa, four parts provender, two parts beef scrap, one part charcoal.

Every day the hens get something in the line of green food. It may be rape, cabbage, mangel leaves—something is given. The owner tells me he

PLEASURE AND PROFIT FROM POULTRY

sees a drop in egg yield if he lets up on the green food for a single day. Three days later than the missing food of green leaves will be seen the drop in the number of eggs.

Culling

With all the good care, with all the well balanced feeds, with the best houses and proper rearing, this man is sure that his success is decidedly helped by his annual culling of the breeding stock. He breeds up according to the best light he has. Not only does he get rid of weaklings as they show up, not only does he rear with care, but he runs his yearling hens through a rigid testing at the molting season. His hatching is largely done from yearling, two-year-old and three-year-old hens. When the pullets get to be 18 months old, and have been laying table eggs for a year, they go through his hands. He really handles every one that has lived to that age. I cannot go into his ideas of what makes up a business and healthy hen, but simply leave this fact in your mind, that he has a real process of weeding out the undesirables before they ever get into the breeding pens. With this plan followed for some years he has increased the average egg production and got more and more eggs when they bring the good prices. Selling wholesale, as does the man I am speaking of, I am satisfied with 5 cents less a dozen, with no wait for my money, or fuss with the woman who buys at the homes. The retail egg route looks nice when viewed from the standpoint of no experience, some folks make good at it, but for the man with a large plant, or at a distance from market, the wholesale trade is the best. Then as regards the holding on to hens for breeding and for eggs. I have no question in my own mind that the hen to breed from had best be at least two years of age. They lay the large egg, they lay when you want to do the bulk of your hatching, and if well handled will fill in the weeks when the pullets are getting down to business. Summer and fall eggs are getting to be very profitable; weather and feed are with you in the getting of them, and the large hen's egg is more in demand than the smaller pullet egg or early autumn. Even a three or four-year-old tested hen is not too old to keep for another year if she has proven a good breeder, prepotent, in other words. Cocks that have proven their worth are usually good for 4 or 5 years. One of the best hens I ever owned was 9 years old when she died, laying over 100 eggs in her sixth year, and giving me over 50 chicks from spring eggs. For the production of table eggs the pullet is the choice of most poultrymen, and rightly, too, but for the all round needs of the successful business poultry plant the older birds should be well considered.

Using Your Eyes

As a fact, much of the success of this poultryman in the nearby State is due to using his eyes. In other words, he sees what many folks would overlook. Let me apply this to his feeding. As he goes through the large houses he keeps his mind from day-dreaming. He notices that the hens are picking out every particle of beef scrap, or cut clover, from the dry mash. They need more of these articles than they are getting! That house gets more of these, or the single ingredient, when he next feeds. He feeds the hens at night, and "sees" that there is still grain in the litter from previous feeding. Does he feed as usual? No, he passes that pen. Or the hens are gathered in a corner, perhaps under the drop boards, and do not come to meet him. This flock gets no supper from his hand.

There are times, as when the pullets are putting on the final growth before maturity or when laying heavily, that a hen eats much more than at others. There are times when one will consume twice the mash as at

PLEASURE AND PROFIT FROM POULTRY

other times. The man with the clear eye, the thoughtful mind, feeds his poultry as the painter mixed his paints, "with brains!" So this friend of mine cares for his poultry. He certainly lets very little escape his notice and, best of all, he puts into daily use what he knows is best for his success with rearing chicks and getting eggs.

Your Market for Eggs and Poultry

Where shall we sell the product of our poultry farm? Shall we take the prices offered us by our local country store or reach out for some other outlet in a distant town or city? Conditions must help us settle the question. To unload the product of a large poultry plant onto the small store is to lower the price to ourselves and neighbors. Often more can be had 50 miles away than right at home. Perhaps you can ship 100 miles, paying express, too, and then get 5 to 10 cents a dozen more than the local men will pay you. No one need be obliged to sell his eggs and poultry nearby in these days of fair and low parcel post charges. A better market is at hand if some effort is put forth to get in touch with those who want a fresh article and are willing to pay for it.

It seldom pays to go to the neighbors to get their eggs to help make up the number promised. Better fall short in your shipment than send out some eggs that are doubtful in quality. Your neighbors may have the best intentions in the world, but when it comes to taking chances on the quality of any certain eggs they may find in a new place—you cannot trust them. An egg that looks fresh on the outside may be stale inside. Some years ago I knew a farm that took a contract to sell a case of eggs every day in the year, Sundays and all, for 35 cents a dozen. Prices were lower than now. Thirty-five cents then would mean 50 cents now. You would like such a contract now, would you not? This farm did well, filled its contract till the autumn days came on. The pullets had not got into full laying. The hens were laying fewer eggs as they got into the molt. There was not a case of eggs a day. What was to be done? To the neighbors, of course. In a few days complaints came back of bad eggs, "chicks in them." This could not continue, as the eggs were used by a large wholesale drug house in its manufacturing and on the soda counter of its retail city drug store. The eggs were to be guaranteed to be all right without testing. So the drug house hunted up another poultry plant who made good promises—only to fail when it came to the following autumn. It would have been much better to have shipped the cases of eggs short a dozen or two rather than have gone when your knowledge of egg quality could not help.

In these days of high prices high quality is demanded. It pays to cater to this demand and you cannot do it unless you absolutely know the quality of every egg shipped.

The best poultry farms that I know are making excellent returns on the investments. They are doing it by applying good business ideas to producing their sale products as well as to selling in the markets that return good cash for their eggs and poultry. It is no time to get discouraged. Those who lose courage and get out of the poultry side farming, and many will, only help you to get better prices. Stay in the work and use your hands and brains in your operations with chicks and hens.

CHAPTER XII

FALL MONTHS IN THE POULTRY PLANT

I HAVE known successful poultry farms to have their beginning at all months of the year. Some of them have begun in the springtime, when the "fever" was on, while a few have started in late autumn with the buying of a few good breeding stock. In fact, few farms have made any great start outside of the spring months of April and May.

This is not saying that November is not a fit month to begin, that November is too late to make a start. November is a splendid month to begin planning that will be followed by active operations in mid-winter. Knowing what I do now, with the light of over 20 years of poultry work, I would really get busy in February, of all months of the year. I would make my plans in the fall, get my incubator and brooders, have my houses ready, buy my own pens of birds to lay the eggs for hatching, and be ready to start at the best season to hatch chicks, be ready for the best month to brood chicks, be ready to get the chicks out on grass range at the best season of the whole year. Yes, it would be at the fall of the year, now that I got at work on my poultry books and papers, got in touch with the men and firms that had what I needed for a start, and so I would have times and conditions nearly right to win with my opening attempt at chicken work.

Buying Pullets

Many pullets will change hands at this time of the year. High cost of feed will make some folks sell many pullets to save expense. High price of eggs will lead village and town folks to buy pullets for the back-yard hen house. If there is a surplus of pullets, which shall be sold? You will be offered twice as much for the early hatched pullets as for those of later hatch weighing twice as much. Sell the later ones if you can find buyers for them. A pullet that is laying in November is worth three times as much money as one hatched three months later. These late hatched pullets are discouraging property for the poultryman. If you have room for only a certain number of layers, and have more pullets than you can house, by all means sell them even at what it has cost to raise them. I advise holding on to pullets, as eggs will be high all through the coming year. Food values cannot help being high with the hard experiences that the world is seeing. Pullets hatched in June and July, though they do not lay in the autumn, will be money makers in late winter, and be your best producers of eggs next autumn. Perhaps you can fix up the barn cellar, or some unused shed or wagon house, and put the surplus stock in there.

If you are buying pullets take any you can get, provided the price is right for the size and age you get. Whatever you buy, avoid runts and too small birds for their age. While they may lay eggs, they will be few in number, small in size, and injure the quality of your product. Where eggs are 50 to 60 cents a dozen in November and December a laying pullet is well worth \$2.00. Pullets weighing from 5 to 6 pounds can be sold next year for dressed poultry for \$1.25, perhaps more, and it is not always necessary to pay over \$1.25 or \$1.50, even this month.

I am coming more and more to believe that Plymouth Rocks, R. I. Reds and Wyandottes should be hatched out between March 15th and April 10th. I used to think that the early hatched chicks would surely molt in October or November, but seldom see one in late years. The best laying hen I have at an egg laying contest was hatched March 26th, and laid 238 eggs up to October 16th. Last week she laid 5 eggs, the week before 5 eggs, and bids

PLEASURE AND PROFIT FROM POULTRY

fair to do as well the next fifteen days before the ending of the year's contest. I speak of this hen because she illustrates what I mean by fairly early hatching, becoming mature in mid-autumn, a big and vigorous pullet that must have been a profitable laying proposition. I find that Wyandotte pullets hatched before the 10th of April reach good size, become mature by October 15th, and are laying before the 1st of November. In every flock of any size there are always a few precocious pullets that lay at 4 or $4\frac{1}{2}$ months, but I am always sorry to see them. I want the pullets to get nearly standard weight before beginning to lay, and then I know that the eggs will be good size, and the egg yield will be steady and profitable.

Shall Alfalfa Be Fed?

I have been asked by many of my readers if the Storrs Formula for dry mash would not be improved by the addition of alfalfa. Perhaps it would. I am led to saying this because of what has been gotten in egg yield at the North American Egg Contest in Pennsylvania. This contest was held at Storrs for two years and then transferred to Pennsylvania. This Storrs dry mash has been fed all these three years of the contest. This year the egg record is better than the first two years. The only change in the feed has been the addition of an alfalfa sod. The yards were full of alfalfa, it even grew up through the earth floor of the houses that sheltered the contest hens. They had alfalfa all through the months of the year. At Storrs they had mangel beets to feed in the early months of the winter, and dried beet pulp wet with water later in the spring. They did not get the egg records as did the Pennsylvania contest, but this may have been due to a more severe winter and higher winds. Alfalfa is good hen feed if you are moderate in its winter use. There is danger that its great bulk when swelled will prevent the hens eating enough other food to give the nourishment needed to produce lots of eggs. I find that the paying poultry farms feed something in the line of alfalfa, cabbage, mangels, beet pulp. If you use the Storrs formula for mash feed, do not add over one-tenths by weight of alfalfa to it. Better feed the alfalfa in another hopper!

High Protein Feeds

As prices of feeds is on the increase more attention should be given to protein contents. If beef scrap should rise, as it has not much to date, then we may see fit to look to other sources for part of the protein that we have been getting in the beef or fish scrap. We may substitute, perhaps, linseed oil meal, cotton seed meal, gluten feed, brewers' dried grains, or even buckwheat midds. Even dried ground beans and peas may be found useful in the ration. What the future may have in store for us we little guess, but some changes in our feeding are on the way. Profitable poultry plants may have to use these modified formulas in order to retain the profit desired. The New York College of Agriculture has lately issued a little card on the balancing of rations for dairy cows. Its facts will be worth remembering. It gives the following protein per cent in these feeds:

Malt sprouts.....	26.3
Linseed oil meal.....	33.9
Cotton seed meal.....	45.3
Gluten feed.....	25.0
Brewers' dried grains.....	25.0
Buckwheat midds.....	26.7
Cull beans.....	21.6
Pea meal.....	20.2
Distillers' grains.....	31.2

PLEASURE AND PROFIT FROM POULTRY

Higher prices of grain is going to make the poultry farmer grow more of his feeds. There will be larger acreage of corn, mangels, cabbage, wheat, barley and buckwheat. The wide range on which the chicks have been reared for years will be turned over and put into corn. The large yards will be seeded to rye and clover, or even alfalfa. The rich droppings of the hens and chicks will become available when some growing crop is allowed to ripen its seed or roots.

I have seen more corn fields this year than ever before. The growing chicks have had free range in the shade of the corn stalks, and chicks and corn have both done better because of the presence of the other. When you can raise two crops on the same field—corn and chicks—you are “making two blades of grass to grow where one grew before.” Rye put in on large fields near the poultry buildings makes possible a fine winter range on green fields. The rye will not be injured and the hens will lay all the more winter eggs.

Winter Housing

Right or wrong, the tendency today is to keep the laying stock in the buildings through the winter months. Less and less are the hens given access to the yards, and more and more they are given abundant air in the winter houses. The open fronts seem to have taken the place of the outside yards, at least in the cold months. Free access of air and sunlight, feeding of scratch feed in deep litter, full hoppers of a balanced dry mash, with green food, seems to have largely settled the maintaining of health in winter as well as getting more or less eggs. For laying quarters in most climates a shed-roof house 20 feet deep, 9 feet high in front and 5½ in the rear, makes a very practical house that is economical to construct. This house can be built in sections and added on to as the needs demand. For each 20-foot section you should provide about 40 square feet of glass, or in other words, two windows placed in either end of front and as near the top as possible, to permit the late afternoon sun to penetrate deeply into the house. For every 20 square feet of floor space you should provide about 1 square foot of open or muslin space. Muslin frames should be used and hung on hinges or a slide so that they may be opened, partly opened or entirely closed on stormy and bitter days. The muslin must be kept clean and free from dust, for unless this is done you will have nothing more or less than a tight house that is conducive to colds and roup. Dampness will occur.

This type of house has been successfully used by the New Jersey Station and at Syracuse University for several years and is recommended by them. For more detailed plans on this building write the Advocate.

Larger egg yield has not altogether come from improved methods of care and feeding in winter, but is partly due to earlier hatching and better feeding through the growing of the chickens. They reach maturity at a more suitable season, are better housed in late autumn, and then the good care and balanced feeds bring the desired results. Early getting into winter quarters has reduced the number of cases of fall colds or catarrhs and roup. I was on a well known farm last week where not a case of colds has been seen this autumn. There was not a chicken that had a discharge at the nostrils. This is partly due to the fine weather of the entire autumn, but more largely to the fresh air quarters of the winter houses. Chicks left in the small coops too long are the ones that give the cases of canker, colds and roup.

CHAPTER XIII

EARLY PRODUCTION SPELLS SUCCESS

NATURALLY a year's work begins with the coming of the first pullet egg, and ends twelve months later. Here in America we try to get our stock matured so as to begin laying in late October, or before the coming of severe winter weather. That we fail in doing this is testified to by the shortage of eggs and the high prices that prevail. Records seem to prove that the pullet that starts to lay in late autumn is the one that does the largest laying of the following year. I know there are exceptions to this, but as a rule it is true.

Will not yearling hens lay as many eggs in the twelve months following November first as will the pullets? They seldom do. Sometimes you will get hens that were poor layers as pullets that do lay more eggs in the second year. I am not saying that hens may not be profitable on the farm, but I look to the pullets to give the large egg profits of the flock. The best use you can make of the hens, yearling or older, is to have them produce your eggs for hatching. Many of the undesirable pullets will be weeded out by death or selection in the opening year of work, and leave a larger proportion of "good ones."

Coming back to egg records, let me suggest that trapnest records are the only safe ones. More than this, trapnest records of some well supervised egg contest are what the reading public are watching. Private egg records have been given some attention in the past, taken with some reservations and accepted as the best to be had. Today the weekly egg reports of the Storrs Egg Contest, the Missouri Contest, the North American Contest, as well as others, are being scanned closely as they appear in newspaper or bulletin. The buying public are asking that well attested records be given. I am glad to see that some of the well advertised egg farms are entering their stock in some contest. They have the courage of their convictions and are willing to risk whatever the results may be. It will be only a few years when we shall see more of these plants getting into the publicity of some big station egg laying contest. Last week I had a report from a farm that I have visited, a farm where trapnests have been used for several years, that the last year had shown that one pullet had laid 306 eggs. It would take courage to go into print and claim this record, and yet I do not doubt the truth of it. This practical farm has taken a forward step when it started the month with a pen of pullets at the Storrs Agricultural College in Connecticut. I shall watch the work of that pen to see if the owner had such knowledge of his stock that he could select birds that would lay over 200 eggs each as an average. He would be tempted, if he had the records to select from, to send full sisters of that 306-egg bird of his. Did he? I do not know. This is a fact, however, some of the best layers I know, this winter, are full sisters to one of the big record layers of an Eastern contest. Whether they will reach her high number of eggs will be shown by the final report at the close of next October's work.

Does Blood Tell?

It certainly does. Experiment station records are showing this every day. High egg production is an hereditary characteristic. Where would we get our high producing strains if this were not the case?

Males, the get of high producing dams, will usually prove prepotent and often raise the production of most flocks above the average. High producing females are also capable of transmitting their qualities to their offspring.

PLEASURE AND PROFIT FROM POULTRY

It was once thought high fecundity (egg production) was transmitted only through the male, but late experiments and tests covering several generations indicate females have this quality also. Experiments that are now in the making to show to more advantage the true value of the male and female, or in other words the proportionate value of one over the other in transmitting this quality.

Don't be misled into believing that every 250-egg hen will produce her like, or that every male by a 250-egg female will produce 250-egg females. Wouldn't it be easy if such were the case! Two hundred-egg strains are scarce, yet 250 scarcer, and 300 out o' sight. Several hens laying 200 eggs mated to a fecund male does not constitute a strain of 200-egg layers. When that mating produces in its succeeding generations a vast majority of 200-egg females, and the succeeding generations do likewise, we might say we have a 200-egg strain. But such does rarely if ever occur. We are getting closer to it, however, every day, and I feel the time is not far off when the average production of extremely large flocks will be mighty close to 200 eggs.

High egg production can be bred into standard bred fowl as readily as in the ordinary bird we see in most flocks. Mr. Harry Lamon, senior poultryman of the U. S. Department of Agriculture at the Government Experimental Farm, Bellsville, Maryland, has demonstrated beyond a doubt that high egg production and exhibition qualities can go hand in hand. If you had been at the recent Madison Square Garden Show you would have seen some of the finest exhibition quality Leghorns and Wyandottes your eyes ever feasted on. Every one of the entries Mr. Lamon showed had two or more dams back of them that had laid over 200 eggs. Every female he showed had produced over 200 eggs. These birds were not in competition, but had they been a good many blue ribbons would have gone home with them. Producing this type of stock opens more avenues for the poultryman; he can sell individuals at high prices for their beauty or exhibition qualities as well as for their laying qualities.

Profit in Eggs

There is a reaction from depending on sale of eggs for hatching and for stock breeding, to the production of table eggs and dressed poultry. I do not want you to understand that by this I mean that fancy poultry is being less bred but that eggs and dressed poultry are seen to be the foundation of paying poultry. It takes a man with a special bent, a special make-up, to handle fancy breeds along high grade and show lines. Few farms ever succeed that begin with the fancy lines as the prominent factor. More and more we are finding purebred stock filling the houses of the paying plants. More and more we find that the poultry farms that continue ten years are those that have contracts for eggs by the case, dressed poultry by the dozen.

There are two classes of poultry farms, egg farms, that I know something about. The older class, not many of them today, fill up the houses with half-grown pullets in late autumn and expect and get few winter eggs before March. These farms pay from \$1.00 to \$1.50 for each pullet, give them indifferent care and feed through the winter, and make perhaps 80 cents to \$1.00 per layer before October. The owners of these plants, it seems to me, are "penny wise—pound foolish" in their method of getting returns.

The larger, and better class, rear or buy first-class pullets, get them well mature before cold weather, and get eggs enough to hold an all year round trade. They plan to keep their contract to deliver one, two or more cases of eggs every week in the year. They have old hens enough to get a moderate number of eggs in the autumn, enough big pullets to begin laying

PLEASURE AND PROFIT FROM POULTRY

as the hens get into the last of the molt. Some of these latter farms are clearing \$2.00 to \$25.00 for every hen and pullet owned on January first. This sort of farmer has birds that will dress off to meet the highest requirements of a critical market. That means an extra 5 cents per pound added profit to the cash returns of the year. This progressive sort of farm has thoroughbred stock, is proud of it, takes better care of it, and does get chances to sell eggs for hatching and birds for breeding. A paying farm of this kind gets from \$3.00 to \$5.00 for breeding pullets in the autumn, as well as \$5.00 to \$10.00 for cockerels for breeding. Some of them are selling day-old chicks, to the gain of the buyer as well as increasing the thickness of the pocketbook.

The man who is getting an egg profit of \$1.00 per hen is never happy in telling of it, is half ashamed of it, and it all reacts on his daily habits on the farm. On the other hand, the man who is really making a business success of poultry keeping is bending his energy to getting the best out of his hens, is right in line for added profits, is in demand for lecture work and a writer on poultry matters. We had such a man in Mr. Tobey at the last winter session of the Connecticut Poultry Association. He left the banking business in Boston, drawn by his love for the country, and started a poultry farm in New Hampshire. He has followed out the line that I have said was the proper one to get the best in profits in poultry. He has a strain of hens that are sturdy, good layers, good profit makers, as well as stock that takes the eye of the user of fancy dressed poultry. He is in demand as a lecturer, could have more engagements than he will take, and as several said to me last summer: "Tobey is all right!" Nothing would take him back to the city; nothing would make him leave the country farm; nothing would make him lose his interest in business birds. Yet he is a fancier, and knows it, loving his good looking birds, and breeding with care. Through it all he clings to his belief that, dollars to doughnuts, the profit is in farm poultry on the modern farm.

CHAPTER XIV

ARTIFICIAL ILLUMINATION

PROPERLY handled, lights will increase egg production and profits through the winter months. We all know winter eggs bring the top prices, and anything we can do to encourage biddy towards shelling out a few more of the precious ovals during this time without weakening her constitutionally, is good business. Every successful poultry farm I know of is using some form of illumination with great success. As a warning I want to say that faulty management, irregularity, indifference on the part of the attendant will cause havoc in the pens. The use of lights is an added responsibility. Remember that!

Electric lights are the best to use, followed by gas lanterns and kerosene lanterns. I doubt if the latter will pay to fool with in most flocks. I have tried them without much success. Electric lights are cheaper in every way. With sufficient birds—500 or more—I am confident the installation of a lighting unit will pay where you do not have public current. It will certainly prove its usefulness in the household, with all the drudgery of filling lamps and lanterns eliminated, and the convenience of the electric iron, mangle, toaster, percolator, besides the glory of having lights on the turn of a switch.

During the winter of 1919-20 the New Jersey Experiment Station found that 600 pullets without lights returned a profit of \$3.30 per bird; 500 given morning light, \$5.07 per bird, and 100 pullets given an evening lunch returned \$5.48 per bird. Using a Western Electric Farm Lighting unit on 1,100 birds, the fuel and operating cost for the winter months was 4.4 cents per bird. "One egg increase paid the fuel costs."

There are four methods of using lights—morning lights, evening lights, a combination of both, and the lunch-hour method. The first and last of these methods have proven to be the most satisfactory.

Morning lights should be on from 4:00 a. m. until dawn, operating from November 1st with pullets, January 1st with hens, until April 1st or later.

The evening lunch-hour method particularly appeals to me. In my case it has proven more economical and less bothersome and less worry.

The lights are turned on at 9 o'clock and permitted to run for 1 hour. At 9 the crops are empty and the birds are ready for a good feed of grains. It serves the purpose for which lights are used by breaking up the long period of darkness with a feeding period. With morning and evening lights the rest period is much less, creating a danger in awakening the fowl. As a New Jersey station circular states, the lunch-hour method does not break into the normal time of going to or coming off the roosts, eliminates the 4:00 a. m. watering and feeding, and still gives the birds plenty of time to fill up.

Birds under lights lay more eggs because they have the time to eat more feed and not because they have more time to go to the nests, as some might believe. So a heavier feeding schedule is necessary, with a different method of feeding. When lights are used there should be four feedings of grain—morning at dawn, noon, evening (about 3:30) and at 9 if the lunch-hour scheme is used. About 14 or 15 pounds of grains to 100 hens will be sufficient. Of course the mash hoppers are open at all times.

Two 25-watt lamps to every 400 square feet of floor space, hung to within 5 feet of the floor over the feeding area.

Your experiment station will probably have some interesting data on artificial illumination that I would suggest you write for.

CHAPTER XV

DECEMBER EGGS

OFTEN December eggs give the best indication of a poultryman's training. The farm that can show a good December record need not look far for better methods of care and feeding. To get these eggs in the opening month of the winter, take forethought. Long ago, last winter, the eggs were selected and put into the machine. The chicks were hatched in March or April, taken through the growing months without a setback. Feed has been well selected and bountiful, housing conditions have been well thought out, the chicks have not had to fight lice and mites. From the egg to the laying pen the pullets have had good food, good care, good coops. Even back of the setting of the eggs must have been careful breeding for several generations. The secret of December eggs is good poultry methods through the months and years. No man can take a pen of pullets and get December eggs unless there has been much care expended months before.

We have the pullets in their winter pens. What shall we feed and how give it? That brings us down to earth again and trying to be helpful. We need to realize that December days are short. There are few hours to scratch in the litter, more time on the roost. Winter rations need to be more concentrated than those of summer. I have seen formulas used on large farms that were too bulky, at least for the early winter months. There is no best ration to get eggs in cold weather. There are dozens of good formulas in print. Nearly every agricultural college has a formula different from the others. Any of these will give good results if fed with some observation of its effect. It is hard to get a good formula that does not contain animal food. Vegetable protein does not seem to fill the place of that found in beef and fish scrap, green bone or milk. The farm that has a supply of sour or buttermilk has a form of protein that is hard to equal in any other food. Sweet milk is best fed by mixing with ground grain and fed in the form of the wet mash. Better keep the milk till sour, use the dry mash, and keep down the labor of the plant.

Most farms that I know have settled down on the use of the wide open dry mash hopper, green food of some sort at noon, with either the feeding of grain by hand in the middle of the afternoon or the constant use of one of the commercial scratch feed hoppers. Litter is kept on the floors, water given twice a day, and a careful oversight is given to the hens by the man who is in charge. Attention to little details may be the cause of success rather than failure. Some of the failures in poultry keeping might have succeeded if the man had stayed in the kitchen and the wife fed and cared for the hens. Women have long been known to be successful in getting winter eggs. I think this is due to their seeing what is needed to give results. One man I know went through his hen house several times a day for a week and did not see that there was one hen that was filling a nest with eggs in a corner of the floor under the roost board. This was in cold February, eggs freezing at night, and every egg worth good money for hatching. A woman would have been on hand to catch the warm egg.

If your pullets are immature, under weight, you cannot look for eggs till the birds have made more growth. If the hens molted in late November you should not look for eggs from them in December. It takes time to get on a coat of new feathers, and toward the close of the molt the drain on the hen is larger than at the beginning.

Winter eggs—December eggs—come from hens that are in dry houses, breathing good air, not pushing each other in endeavor to get on the roost

PLEASURE AND PROFIT FROM POULTRY

at night. They have some chance to scratch without getting in the way of the other birds. They are not overfed or underfed. If December eggs were easy to get, eggs would not be the price they are this year. Plenty of eggs mean low selling price.

Poultry Manure

Every poultryman realizes that there is good value in poultry droppings. Use a yard for a few years, and then leave it empty for a summer, and see how the rank growth of weeds will spring up. Go out on the range, where the chicks were reared the year before, and see the tall grass that is around the places where the roosting coops were set! The poultry manure should be considered in figuring up the profits.

Fresh, clear droppings from the board under the roosts is worth around 20 cents a bushel. It is worth more, rather than less. Dried droppings is worth even more, if the manure has been kept from sending off its ammonia. Road dust, garden soil, hardwood sawdust, dry muck, acid phosphate or ground plaster can well be used to keep the droppings from losing fertility. I have usually depended on the garden soil that is put into the houses in the autumn, put in from three to six inches deep. After cleaning off the droppings boards, a dozen handfuls or so are gathered from the earth floor and spread over the boards. Then when the next cleaning comes off it is well mixed together. Through the winter months about half the droppings fall on the dropping boards and half into the litter of the floor. That on the boards can be taken off and stored for spring use for fertilizer. That on the floor is well mixed into the earth and litter and is cleaned out in the spring and spread as removed. This earth from the floor is much richer when taken out than when put in. If it were not for the weed seeds from the grain fed, and from weeds that are used for added litter, this rich material could be used for any garden or field. However, it is best to spread it on grass land or pasture, where the danger of strange weeds getting a start is small. A neighboring farmer always puts his cleanings from the house onto the pasture.

The droppings that can be saved in a pure state can well be mixed with other materials and be directly used for growing crops. One of the best of the agricultural colleges advises the addition of one to two pounds of acid phosphate to every bushel of droppings for its keeping powers.

Top Dressing Grass

Mix 1,000 pounds of hen droppings, 60 pounds of superphosphate, and 40 pounds of potash. For raising garden truck mix: 1,000 pounds droppings, 250 pounds superphosphate, 100 pounds sulphate of potash. We are told that this formula is equal to fertilizer ordinarily sold at \$40 a ton.

Corn Fertilizer

Hen droppings.....	1,000 pounds
Superphosphate	40 "
Muriate potash.....	100 "

Use 1½ tons of this to an acre for corn, or 1 ton for an acre of oats.

Manure for Mangels

For an acre of cattle beets, or mangels, as most of us call them, use the garden formula. That is, for an acre you will require:

Hen droppings.....	3,000 pounds
Superphosphate	750 "
Sulphate of potash.....	300 "

This should give a big yield of mangels and leave some material over for later cropping.

PLEASURE AND PROFIT FROM POULTRY

It is well to consider the collection, and holding, of poultry manure in these months when it is so easily gathered and preserved. With high prices that are sure to be asked for even ordinary commercial fertilizers the coming season, we should see to it that we save what we can of that right on the plant. In case that potash cannot be had at a price that we can afford to pay, then it will call for a more moderate spreading of the pure hen droppings. Too much of these droppings will give a green growth that breaks down in hard or severe winds. So be content with shorter grass and more hard stems.

There is no better place to keep these droppings than on a board floor of a small house, or in a dry corner of the barn, where they can be turned over from time to time. They should not be allowed to "cake" or form into hard layers, but moved often enough to keep in good handling shape. Then when you come to use them in the spring or summer there will be little time required to get them ready.

CHAPTER XVI

SELECTION OF BREEDING STOCK

ICARE not how careful was your selection of breeders last year, more time and patience should be put into the selecting this year. If you make up your matings the early part of January, then go over them all before you save a single egg to hatch. You will find 10 to 20 per cent of the birds that will not pass the test of your good judgment. Have a higher standard this year than last. If you had left out of your mating last year that cockerel that was a little doubtful as to stamina you would not have had so many late maturing pullets and so many runts in the fattening cockerel pen. If you have any doubt as to the value of any bird, promptly reject her from the pen. Keep her as a layer, if you wish, but for a breeder—never! Such stock always is costly to the breeder, and a decided damage to the man who buys hatching eggs or breeding stock from your yards.

Egg yield and standard quality are going to play an important part in the success or failure of many farms the coming five years. Those breeds that will give the buying public what they want along lines of eggs and poultry are going to take a forward movement. My word for it, cockerels from hens of high egg record are going to sell for good money next autumn. You are going to be asked: "What is the record of the hen behind this male?" If you cannot answer the question satisfactorily that man is going elsewhere for his new blood. It has been said that trapnests were going by. It may have been true 10 years back, but today there are more in use than at any time in 20 years. It has been found true that facts as to egg yield can be applied to the buying of stock or in the mating of pens. You are going to do most of your hatching from hens that have made their good record as pullets, hens that are mated to males from known good male ancestry. It will not do to lean on males alone but on the combination of good blood and good trapnest records. Some of the farms that have been trapnesting the last five years have now become so sure of their facts that they are entering pens of pullets at noted egg-laying contests. They are willing to leave it to the records that the hens make, in the year's time, whether they are breeding along right lines or not. One farm that I know, that got one record in their own nests of over 306 eggs from a pullet, has 10 pullets now being tested out at the Storrs Contests plant. A few years ago these contest managements had to go out and ask for entries. This last autumn they had hard work to decide which pens to reject. Instead of some of these contests dropping out of the work, there will be more of them in connection with state colleges or experiment stations.

I find farms, during January, that have started their big incubators, that have chicks scratching in the brooders, that are shipping out eggs for hatching and chicks for rearing. More large hatchers have been installed, more of the big brooder systems set up. The poultry business that 20 years ago we were told was soon to be overdone is now just getting into its steady walk. There have been ups and downs, successes and failures, but today the poultry business has the respect and good will of everyone.

Breeding for Eggs

We have come to the time when we must accept the fact that breeding for large egg production is just as possible as the breeding for fancy points. We have got to know our best layers, have got to have some plan of knowing the chicks from a certain hen. There is no other way that is at all satisfactory that we can follow. Back to trapnests we must go! The man who

PLEASURE AND PROFIT FROM POULTRY

has been intelligently and honestly using trapnests, the experiment station that has been breeding along lines of record hens and males, is showing us that there is more in their work than we realized. Into a few of our pens of selected layers let us set up a series of trapnests. I would give a bunch of bank bills if I knew at this moment the cockerels that were out of the egg laid by a certain pullet of mine last spring. She has made her record, her chicks are out in the flock, yet I cannot pick them out. I know their sire because I pedigree according to pens. Now I must go on with the process and know the dam as well as sire. Along fancy lines I have been doing fairly good work with trapnests, but now I propose to extend it to the utility stock. There is no question in my mind that others of the profitable poultry business will have to turn to trapnests if they want to do advanced work with record hens. One, two or three dozen extra eggs a year does not mean much when you keep a few hens, but when you winter hundreds of them the increase will mean many dollars to you.

As the eggs in the breeding pens increase in numbers I would advise the reducing of the quantity of scrap fed. You may not continue to get increased numbers but you are almost sure to get eggs that will hatch better. Stimulating the egg organs in the breeding season is one of the causes of poor fertility and low hatchability of the eggs. More than that—you get a less watery egg, one that brings out a chick that has livability in it! If you had poor success last spring with your hatching, you can do no worse with following these simple directions of mine. In actual practice I drop out all beef scrap and in its place use a good fish scrap. That is what I did last winter, the winter before, and the winter before that, and I have no fault to find with my hatches.

Selecting the Breeders

I would go over my females and select those that best fitted my ideal. If I had egg records they would help me in my work of making up pens. Having found the females that I needed and had them penned together, I would last of all go over the cockerels and cocks, to find the proper mate. If the vigor of the breeding birds is beyond question, if I know the ancestry beyond a doubt, then I would not hesitate to breed sire and daughter, sire and granddaughter, son to dam, or son to grand-dam. I would go a long ways for new blood before I would mate brother and sister. If I did not know my stock, if I did not have any definite plan in view, I would go out for fresh blood until I learned to know more of breeds and breeding. I have one cock that has sired a 246-egg pullet, that has sired another pullet that laid 50 eggs in last November and December at the Storrs Egg Contest, and that cock will be mated this month to his daughters and granddaughters. He will remain in the pen till the middle of April, when he will be replaced by a cockerel of the same line of breeding but not at all near. I do not want to have all my "eggs in the same basket," so shall not spoil my whole season's work by relying on a single male. This cock is as vigorous at the beginning of his fourth year as when a cockerel, and I expect him to head a pen another year.

Old birds that are full of life make your best breeders if you handle them with good judgment. The very fact that they are so strong at three, four or five years of age shows that they must have inherited what you most need in breeding lines—absence of disease tendencies. These are the birds that you can line breed; can inbreed along the lines I have indicated.

The Breeding Pens

We cannot longer put off the final mating up of the pens that will give us hatching eggs. The pens of layers cannot be pushed for larger egg pro-

PLEASURE AND PROFIT FROM POULTRY

duction unless you have been doing this the past two months. The breeding pens need more square feet of floor space, more litter on the floor, more fresh air, than the laying pens absolutely require. You need outside conditions and yet have the stock within doors. Sunshine, air, dryness, room on floor and roosts, should be given the layers of eggs for hatching. The modern house with its glass and cloth front, with its open windows, will let in air and sunshine. You prevent much of the dampness by proper floor, by change of litter as it becomes soiled, and mostly by the constant passing out of dampness of the birds' breath through the muslin-covered window frames.

The pens are mated up with various numbers of females and male. The Leghorns will give you fertile eggs when one male is penned with not more than 15 or 20 females, while the larger breeds demand fewer females. My Wyandottes are in lots of 10 to 14 hens and pullets to one cock or cockerel. My Leghorns are mated so that 15 hens are with one cock, and 20 pullets are with each cockerel. Where larger numbers can be put together, say 50 Leghorn pullets, then two cockerels will answer. The larger the flock the fewer males are required. I have one house with 70 Leghorn pullets in it with three cockerels giving fertile eggs. This is not one large square house, but is 12 x 24 feet, with three partitions extending out two-thirds the way from the back wall. With these numbers, and with these arrangements, I have yet to have any failure either from lack of fertility or failure to get vigorous chicks. Seldom is it worth while to let the breeders out into the runs unless the air is mild, the ground dry, and no high winds. Unless you have these conditions it is better to give them summer conditions within the houses. Open up the fronts, give litter freely, clean out the soiled earth and droppings three times a week, and get after vermin.

Saving Green Food for Winter

It is now that we are storing up some of the food for the coming months of winter and spring. While it is not exactly green food it is next to it. Dried clover, alfalfa, vetch or common hay are no longer "green" when dry enough to keep without heating. They are mighty helpful when it comes to making up a good winter ration. I have part of my barn now filled with some of this well dried crop for my poultry when the ground is frozen. One loft is filled with a splendid mixture of winter wheat and alfalfa, seeded in August and cut in June. It was dried in the cock, is as green in color as you would like to see, and is full of the good qualities of the wheat and alfalfa plants. Another loft has a ton and a half of a mixture of winter vetch and winter wheat, seeded in September and cured in late June. This was cut when the wheat was just blossoming and the vetch in all the glory of the beautiful flowers. This was cured in the windrow, brought in while still slightly green, and safely stored away against a time of need. The next crop of alfalfa, to be cut in July, will be saved to go into the dry mashes of the small chicks of another spring. The wheat, the vetch, the alfalfa, will be run through a cutter that gives quarter-inch lengths, will be mixed with the ground grains and scrap, and fed in either a dry or moist form to my poultry. Will I use the dry leaves that fall off as the alfalfa and vetch is handled in the barn? Yes, if I have any. In the condition that mine is this year I doubt there being many leaves that come off the stems. It is "cured in the shade," like tea, not much like some of the baled hay that I have often bought. There will be little clover to harvest this year, but what there is will be saved for cows and hens. I like the farm as a place to live, as a place to handle good poultry, and the ideal spot to raise good chicks. All folks cannot live on the farm, but those who do have the advantage of the village and town people.

CHAPTER XVII

FIGHTING VERMIN

HOT, sultry July days give conditions that tend to the coming of large numbers of red mites. Debilitating summer weather lessens the activity of the hen as regards dusting for lice. Busy as the farmer is, he must watch out for vermin in house and on the hens. The body lice can be handled by the use of "blue ointment" and lard—equal parts—a small amount being rubbed into the short feathers just below the vent. A single application will usually dispose of the lice problem for the summer.

The U. S. Department of Agriculture has recently discovered a better method of eradicating lice with the use of Sodium Flouride. When purchasing Sodium Flouride see that it is in the commercial form, that it is the powdered form. A box or pan sufficiently large to hold the bird should be provided. The legs may be held by one hand and a pinch of the chemical placed into the feathers with the other. Seven or eight pinches should be sufficient to cover the bird. Be sure to cover the head, under wings, around vent, back and breast. Distribute such pinch by pushing thumb and fingers among the feathers. Providing a box or pan will prevent wasting the material. You can use over again that which has dropped off the feathers. Be careful not to raise much of a dust when applying, for Sodium Flouride is irritable to the membranes of your throat and nose.

Enough of the powder will remain in the feathers to kill the lice that hatch later. In a week's time practically all lice will have been killed.

Sodium Flouride is poisonous, so be careful when using it to see that none of it gets into the drinking water or feed.

Red mites will be driven from their retreat by the heat of noonday, and will be seen in large numbers on the inside of the walls, or at the end of the roosts, or on the droppings boards. Get after them at once. You cannot keep up the egg yield and have these insects sucking the hen's blood through the night. In the press of the June haying one of the four-pen houses showed signs of red mites. They did not get badly started but enough to make me uneasy when I went to pick up eggs in the middle of the afternoon. A 5 per cent mixture of Zenoleum and cold water was made, a hand pump brought into use, and those four pens were sprayed thoroughly. This was done along 5 o'clock in the afternoon, leaving the roosts and walls still damp when the hens went to roost. Whenever a mite got in the range of the spray it quickly went to its long rest. Three days later I sprayed again. Carbolineum 1 pail to kerosene 3 pails makes one of the best sprays for mites I know of. I have just had a letter from one of our subscribers who tells me she knows mites and lice, but did not realize what spider lice were till lately. She said that when she went into her nice winter house the insects were on the walls and soon transferred themselves to her. This house was used last year for chickens and fall brooding, but had been empty through the early winter. She had been reading something of mine where I had spoken of spider lice, so she wrote to tell me that now she knew them. I had to write her that what I called "spider lice" were red mites, just the same insect under another common name. What I wish to make plain is that lice live on the body of the fowl all the time, while the mites or spider lice are on the birds only when they want a meal of fresh blood. They fill up on the blood, retire to crack or behind a board, there to digest the full stomach of good food. These mites that were moving over the walls, getting onto her, were extremely hungry and on the move to get next a supply of good blood; had there been a flock of

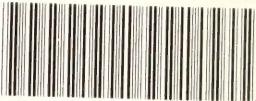
PLEASURE AND PROFIT FROM POULTRY

hens in that house they would have first have had a chance at the birds and then a few scattering ones got onto her.

In Conclusion

Everything will not run smoothly, there will come unexpected troubles, but through it all maintain a good grip on your affairs. Take what comes with quietness, study your successes and failures, that you may profit from one and avoid the other. Country life is coming into its own in these late years. The poultryman is often the envy of the city dweller, though he does not always deserve it, and the good poultry plant is not to be smiled at as a place of business.

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